



# I.M.A.G.S.B. NEWS BULLETIN

Estd. On 2-3-1945

## GUJARAT MEDICAL JOURNAL

INDIAN MEDICAL ASSOCIATION, GUJARAT STATE BRANCH

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**STATE PRESIDENT  
AND  
HON. STATE SECRETARY'S  
MESSAGE**



Dear Members,  
Seasons Greetings,

Anti-Microbial Resistance (AMR) is one of the major public health problems especially in developing countries where relatively easy availability and higher consumption of antibiotics have led to higher incidence of inappropriate use of antibiotics and greater levels of resistance compared to developed countries. In 2010, India was the world's largest consumer of antibiotics for human health.

As you are aware inappropriate consumption of Antibiotics directly leads to drug resistance. Reducing unnecessary consumption would go a long way in preserving antibiotic effectiveness

Indian Medical Association to create awareness on Appropriate Prescription of Antibiotics.

Extended Action Committee meeting was held at IMA HQs, New Delhi this month & declared **War against AMR.**

Following decision was taken as IMA North Zone Declaration, 2019.

- Stop Quackery.
- Stop over the counter sale of Antibiotics without prescription.
- Stop online sale of antibiotics.
- Judicious use of antibiotics.
- Maintain sterility and monitoring of O.T./ICU/Labour Rooms and other critical areas in your hospital.
- Antibiotic policy should be created for every region/state/healthcare establishments after proper scientific evidence.
- Policy on prophylactic antibiotics in clean surgical patients be implemented.
- All health care sector employees should be vaccinated for Tetanus, Hepatitis B at least and if possible, for influenza and pneumococcus.
- Hand hygiene and other infection control practice should be promoted among healthcare workers and society at large.
- Restricted antibiotic list should be identified and published according to antibiograms and to be used only after enough scientific evidence.
- Public awareness poster against self-medications and depicting ill effect of unnecessary use of antibiotics should be pasted in patient waiting area.
- Marketing of antibiotics to AYUSH practitioners must be stopped.
- Strict regulations to restrict the use of antibiotic in poultry, animal husbandry and agriculture.
- Unethical practice by pharma companies to promote target-oriented sale of antibiotics should be stopped.
- Publication of antibiogram of different micro-organism should be published on regular basis.
- Government should fund for research on development of new antibiotics as the pharma companies are not coming forward for the same.

Long Live IMA, Jai IMA

**DR. C. S. JARDOSH**  
(President, G.S.B.I.M.A.)

**DR. KAMLESH B. SAINI**  
(Hon. State Secy. G.S.B.I.M.A.)

## FROM THE DESK OF EDITORS



Dear friends,

We are thankful to all the central council members of GSB IMA for putting their faith, trust and confidence in us and giving the charge of prestigious Gujarat Medical Journal (GMJ) for this year. On our side, we promise to see that the faith and trust that is put in us is full filled and for that, we shall try our best. We are well aware that in these years GMJ has carved out its name as a journal of research oriented and academic minded people, in the medical field. All the editors in past, have tried their best to give a name and fame to this journal and we are enjoying their fruits. But we are aware, that increases our responsibility also. We shall have to work hard and will have to be vigilant to maintain that standard of our journal.

Here, I want to tell our members about the procedure that we are adopting in selection of an article for GMJ. We ask the author to send the article on CD, and three physical copies, of which one copy bears names, addresses, etc., of authors but two other copies, don't have any name or address of authors, they contain only the material of the article. On receiving this our office clerk puts code number on it. Articles are known from its code number only. GMJ editor is given the copy which doesn't have the name, etc. of the author. And editor then sends the said article for review to a retired professor or HOD or having that level of expertise in the subject (whom we call "referee" or "reviewer"). So the reviewer also doesn't know about the author. This procedure is adopted since years.

Without making any compromise with our laid down policy, we have made all the efforts to make GMJ more informative, more interesting and more popular so that large number of our colleagues read it and utilize the knowledge and information provided in it. For this, we welcome your suggestions and comments also.

You all know now, that GMJ is indexed in "Index Copernicus International" (ICI), and all the issues of GMJ since 2015 can be viewed on;

**<https://journals.indexcopernicus.com/search/details?id=43553>**

Our sincere thanks to GSB president Dr. Chandresh Jardosh and hon. secretary Dr. Kamlesh Saini for encouragement and suggestions, and giving us free hand in publication of this journal. We are also grateful to GSB past presidents Dr Kirtibhai Patel, Dr. Jitubhai Patel and Dr. Mahendrabhai Desai for their guidance and help. How can we forget IMA GSB past president Dr. Yogendra Modi for his help, guidance and support? A particular thanks to Dr. Yogendrabhai. We are also thankful to our ex editor Dr. Amit Shah and also to Dr. Urvesh Shah (GCS Medical college) for their guidance and help.

With regards,

**DR. K. R. SANGHAVI**  
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## Original Articles

### A Study on Type of Respiratory Infections and Its Correlation with CD4 Count in HIV Positive Patients

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**Keywords :** HIV-AIDS, Respiratory infections, sputum, CD4 count

#### ABSTRACT

**Background :** Several important changes in the pattern of pulmonary diseases that have become recently apparent have implications for the diagnosis, management and outcome of AIDS patients. The present study was planned with an objective to study pattern of various respiratory infections and to correlate CD4 count with various respiratory infections in HIV patients.

**Methodology :** The present cross-sectional study was carried out in 50 HIV positive patients admitted in Medicine ward/ ICU/TB ward in a tertiary care hospital. The information regarding clinical examination, sputum examination and laboratory parameters including CD4 counts were recorded.

**Results :** The most common respiratory infection was pulmonary tuberculosis (76%) followed by pneumonia (12%). M. tuberculosis was found in 40 cases (80%), P. aeruginosa in 3 cases (6%), K. pneumonia in 3 cases (6%), S. Pneumonia in 2 cases (4%) and S. aureus in 1 case (2%). Mean CD4 count in sputum positive TB patients was  $224.4 \pm 159.75$  while for sputum negative TB patients it was  $167.90 \pm 60.88$ . Mean CD4 for patients of Pseudomonas pneumonia in this study was  $286.66 \pm 160.74$ , while for K. pneumoniae it was  $421 \pm 222.03$  and for P. aeruginosa it was  $270 \pm 124.45$ .

**Conclusion :** It is concluded from present study that there is a strong correlation between CD4 count and pattern of respiratory complications in HIV-seropositive patients. Patients with CD4 count  $< 200$  cells/ $\mu$ L are more prone for respiratory complications. Hence, high level of clinical suspicion required for diagnosis of respiratory complications in HIV-infected individuals particularly with patients having CD4 count  $< 200$  cells/ $\mu$ L.

#### INTRODUCTION

The lungs are portal of entry for many infectious agents in our body that either may cause acute illness or may cause latent infection.<sup>1</sup> Among these, the majority are pulmonary tuberculosis and pneumonia in India. As these pulmonary infections indicate underlying progression of HIV infection, we need to update our knowledge of these diseases for better diagnosis and management.

Over the past decade, several changes in the pattern of disease have occurred. While Pneumocystis Carinii Pneumonia (PCP) is the most common opportunistic pathogen in AIDS patients in developed countries, infection with mycobacterium tuberculosis & other organisms causing pneumonia are major health problems in developing countries.<sup>2</sup> It appears unbelievable that bacterium identified in the 1880's would become partner with a virus isolated a century later, and in combination

poses a challenge in the field of medicine. The pattern of TB in AIDS is distinct from non-immuno compromised persons. The association of TB and compromised HIV has caused so much concern that strategies for diagnosis, effective treatment and control of TB have to be reframed.<sup>3</sup> For diagnostic and therapeutic reasons, especially those concerning prevention, it is far more useful to consider the entire continuum of HIV infection than only the last and invariably fatal stage that we call AIDS.<sup>1</sup>

Again, the pattern of respiratory disease is different in HIV seropositive patients in developed countries and in developing country like India. Above all, because several important changes in the pattern of pulmonary diseases that have become recently apparent have implications for the diagnosis management and outcome of AIDS patients, it is worthwhile to update our knowledge of

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pulmonary disease in HIV infected individuals as we approach the end of the forth AIDS decade.

## MATERIALS AND METHODS

The present cross-sectional study was carried out in 50 HIV positive patients admitted in Medicine ward/ ICU/TB ward in a tertiary care hospital. Considering proportion of HIV patients admitted with respiratory infections, which was calculated by two week pilot surveyed at Medicine ward/ ICU/TB ward at a tertiary hospital as  $p=3.22\%$ ,  $Z$  (level of significance)= 1.96,  $L$  (Allowable error) = 5% the calculated sample size  $(n) = Z^2pq / L^2$  was 50.

Adults HIV positive patients above 18 years of age and with abnormal X ray findings were included in the study while patients with known case of respiratory disorder such as asthma, chronic obstructive airway disease and lung cancer were excluded from the study. The study was conducted after getting ethical clearance certificate and participants are included after taking voluntary informed consent from them.

Detailed history and clinical examination of the participants were done. Two sputum samples (One spot and one early morning expectorated sputum [induced sputum if required]) were collected separately in sterile containers from all patients. Induction of sputum was done using a Nebulizer (model - Medel Aero Family) and 3% hypertonic saline for 15 minutes. Microscopic examination of sputum was done for the presence of trophozoites and cysts of *P.carinii*, while the expectorated sputum was examined for bacterial and fungal pathogens. Bartlett's scoring method was used for microscopic evaluation of the expectorated sputum.<sup>4</sup> A sputum was considered unsuitable if it had a final score of 0 or less. All unsuitable specimens were discarded and a repeat specimen was collected. The sputum specimens were inoculated into blood agar with 10% sheep blood, Chocolate agar with 10% sheep blood, McConkey's agar and Brain Heart Infusion (BHI) agar. Any significant bacterial growth was further processed as per the

standard procedure to identify the pathogens.<sup>5</sup> The sputum was also inoculated onto Sabouraud dextrose agar (SDA) with antibiotics, SDA without antibiotics in duplicate (incubated at 37°C and 25°C) and BHI agar (incubated at 37°C). Any significant growth of a fungal species was further identified as per standard protocol.<sup>6</sup>

In addition to sputum, 10 ml of blood was collected from all patients included in the study for investigations like Complete Blood Count (CBC), Erythrocyte Sedimentation rate (ESR), Renal Function Test (RFT), Liver Function Test (LFT), Lactate Dehydrogenase (LDH) (if needed), Arterial Blood Gas (if needed) etc. Pleural fluid examination was done in cases of pleural effusion if required, and it was sent for routine microscopy, protein, sugar, LDH and ADA.

The majority of patients (64%) were seen in age group of 30-49 followed by 22% in 20-29. Males outnumber females giving a male to female ratio of 1.7:1. Mean age of study participants was 36.2±11.25 years, while mean age for male is 36.13±10.96 and for female is 36.33±12.06.

The most common symptoms were cough (80%) and fever (74%). Among the signs observed in our study, the most common signs were pallor (48%) and oral candidiasis (30%). The most common finding on auscultation was crepitations (70%). The findings like bronchial breathing and increased Tactile Vocal Frimitus (TVF)/ Vocal Resonance (VR) suggestive of consolidation were found in 14% cases. Decreased breath sound and decreased Tactile Vocal Frimitus (TVF)/ Vocal Resonance (VR) suggestive of pleural effusion were found in 8% cases. Rhonchi were heard in 8% cases.

The most common respiratory infection was pulmonary tuberculosis followed by pneumonia. Pulmonary tuberculosis was found in 38 cases (76%), pneumonia in 6 cases (12%), pneumonia with pleural effusion in 1 case (2%), PCP in 1 case (2%) and bronchiectasis was seen in 1 case (2%). Tuberculous pleural effusion was seen in 3 cases (6%).

## RESULTS

Table 1: Age and Sex distribution of patients

Age(years)	Sex		Total (%)
	Male (%)	Female (%)	
15-19	2 (6.3)	2 (11.1)	4 (8)
20-29	8 (25.0)	3 (16.7)	11 (22)
30-39	11 (34.4)	5 (27.8)	16 (32)
40-49	9 (28.1)	7 (38.9)	16 (32)
>50	2 (6.3)	1 (5.6)	3 (6)
<b>Total</b>	<b>32 (100)</b>	<b>18 (100)</b>	<b>50 (100)</b>



**Table 2: Distribution of clinical signs and symptoms**

Symptoms	No. (%)
Cough	40 (80)
Fever	37 (74)
Breathlessness	20 (40)
Chest pain	10 (20)
Weight loss	33 (66)
Diarrhea	18 (36)
Hemoptysis	4 (4)
Oral candidiasis	15 (30)
Genital ulcer	4 (8)
<b>Signs</b>	
Pallor	24 (48)
Icterus	03 (6)
Cyanosis	1 (2)
Clubbing	3 (6)
Pedal edema	2 (4)
Lymphadenopathy	5 (10)
Oral candidiasis	15 (30)
Dermatitis	1 (2)
Genital ulcer	4 (8)

**Table 3: Spectrum of respiratory manifestations in HIV positive patients**

Diseases	No. (%)
Tuberculosis	38 (76)
Pneumonia	6 (12)
Pneumonia with pleural effusion	1 (2)
Pleural effusion	3 (6)
Infective Bronchiectasis	1 (2)
PCP	1 (2)
<b>Total</b>	<b>50(100)</b>

**Table 4 : Spectrum of respiratory manifestations in HIV positive patients**

Micro-organism	No. (%)
M. Tuberculosis	20 (40)
Ps. Aeruginosa	2 (4)
K. Pneumonia	2 (4)
Str. Pneumonia	1 (2)
No any pathogen isolated	25 (50)

M. tuberculosis was found in 40 cases (80%), P. aeruginosa in 3 cases (6%), K. pneumonia in 3 cases (6%), S. Pneumonia in 2 cases (4%) and S. aureus in 1 case (2%). Hemoglobin level was normal ( $\geq 12$  gm/dl) in 15 cases (30%) and anemia was observed in 35 cases (70%). Among anemia, most cases had moderate anemia (16 cases, 32%). Mild anemia was seen in 11 cases (22%) and severe anemia was seen in 8 cases (16%).

Mean CD4 for sputum positive tuberculosis is  $224.4 \pm 159.75$  while for sputum negative it is  $167.90 \pm 60.88$ . Thus it states that sputum negativity is more frequent with lower CD4 count. Mean CD4 for pneumonia in this study is  $286.66 \pm 160.74$ , while for K. pneumoniae it is  $421 \pm 222.03$  and for P. aeruginosa it is  $270 \pm 124.45$ .

### DISCUSSION

In the study conducted by K.C.Mohanty et al<sup>7</sup>, maximum 43.5% of patients were found in age group 15-30 years, followed by 28.3% in 30-39 years and 7.8% in 40-49 age group. Another study carried out by Sunderam et al<sup>8</sup>, similar results were observed being maximum 56.3% in same age group as above and then in 30-39 age group. Fairly comparable results were obtained in the present study.

In the study conducted by K.C.Mohanty et al<sup>7</sup>, sputum smear positivity was seen in 47.8% while negative in 52.2%. Another study of Theur et al<sup>9</sup>, Jayswal et al<sup>10</sup> and sputum smear positivity was seen in 47% and 27.6%. In the present study, Sputum smear positivity was seen in 47.62% while negative in 52.38%

In the present study, tuberculosis including tuberculous pleural effusion is the most common disease seen in 84% cases. K.C.Mohanty et al<sup>7</sup> observed that most common pulmonary disease was tuberculosis [including pleural effusion] (88.8%) followed by pneumonitis (9.4%). The other disease like PCP was seen in 0.9% and bronchiectasis in 0.9%. Another study by Sara Chako et al<sup>11</sup>, similar results were noted. Tuberculosis was the most common and found in 52% cases followed by pneumonitis in 18% cases. 3.2% had nonspecific interstitial pneumonitis.

A study carried out by Toshniwal et al<sup>12</sup> showed that 69.1% cases had respiratory tract infections when their CD4 count was  $< 200$ . Patients with CD4 count  $> 500$  had less frequency of respiratory infections as compare to other group in the study. As the CD4 count decreases, frequency of respiratory infections increases. In present study, comparable results were found. Early diagnosis of opportunistic infections and prompt treatment with

**Table 5 : Association of CD4 count with respiratory infections in HIV positive patients**

Respiratory infections	CD4 count (cells/mcL)			Total (%)
	>500	200-500	<200	
Tuberculosis				
a) Sputum positive	2 (10)	7 (35)	11 (55)	20 (100)
b) Sputum negative	0	5 (26.3)	14 (73.7)	19 (100)
Pneumonia				
a) P. aeruginosa	0	1 (50)	01(50)	2(100)
b) K. pneumoniae	1(50)	1(50)	0	2(100)
c) S. pneumoniae	0	0	1(50)	1(100)
d) No pathogen	0	0	1(50)	1(100)
Pleural effusion(tuberculous)	0	1 (33.3)	2 (66.7)	3 (100)
PCP	0	0	1 (100)	1 (100)
Bronchiectasis	0	0	1 (100)	1 (100)
Total	03 (6)	15 (30)	32 (64)	50 (100)

specific antimicrobials definitely contributes to increased life expectancy among infected patients delaying the progression to AIDS.

### CONCLUSION

It is concluded from present study that there is a strong correlation between CD4 count and pattern of respiratory complications in HIV-seropositive patients. Patients with CD4 count <200 cells/ $\mu$ L are more prone for respiratory complications. Hence, high level of clinical suspicion required for diagnosis of respiratory complications in HIV-infected individuals particularly with patients having CD4 count <200 cells/ $\mu$ L.

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## Original Articles

### A Study of Maternal and fetal out Come in Cases of Gestational Diabetes Mellitus

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**Keywords :** Macrosomia, Oral Glucose, Tolerance Test

#### ABSTRACT

**Content :** Gestational diabetes mellitus (GDM) is defined as Carbohydrate/Glucose intolerance of varying degrees of severity with onset or first recognition during pregnancy". Pregnancy itself is a Diabetogenic State. GDM complicates 7% of the pregnancy. There is much higher rate of maternal and fetal compromise in a diabetic pregnancy as compared to normal pregnancy.

**Aims :** This Study is carried out to study proportion of gestational diabetes in pregnancy and its fetal and maternal outcome.

**Setting and Designs :** This Prospective study was conducted among 32 cases of gestational diabetes mellitus in Department of Obstetrics and Gynaecology , Civil Hospital , Ahmedabad.

**Results and Conclusions :** In this Study , Prevalence of GDM was 0.205%, Most common maternal complication was PIH among 37.5% of GDM pregnancy and Most common fetal complication was Prematurity among 18.8% of GDM pregnancies.

#### INTRODUCTION

Gestational Diabetes Mellitus (GDM) is defined as: carbohydrate/glucose intolerance of varying degrees of severity with onset or first recognition during pregnancy. Pregnancy It self is a diabetogenic state. GDM complicates 7% of the pregnancy<sup>1</sup>. There is much higher rate of maternal and fetal compromise in a diabetic pregnancy as compared to normal pregnancy.<sup>2</sup>

Placental Lactogen, estrogen, progesterone and cortisol also there is increased destruction by kidney and placenta to increase in insulin resistance. All in all leading to physiological insulin resistance of late pregnancy.<sup>3</sup>

The adverse intrauterine environment causes epigenetic changes in the fetus that may contribute to metabolic disorders, the so-called vicious cycle of diabetes<sup>4</sup>.

The mainstay of GDM treatment is dietary and lifestyle advice, which includes medical nutrition therapy, weight management, and physical activity<sup>5</sup>. Women monitor their fasting and post meal glucose levels and adjust their individual diet and lifestyle to meet their glycemic targets. This pragmatic approach achieves the glycemic targets in approximately two-thirds of women with GDM<sup>5</sup>. However, despite the importance of medical nutrition therapy and its widespread recommendation in clinical practice, there are limited data regarding the optimal diet for achieving maternal euglycemia<sup>5-8</sup>. It is also unknown whether the

dietary interventions for achieving maternal glycemia are also effective for reducing excessive fetal growth and adiposity<sup>9</sup>.

Different dietary strategies have been reported including low glycemic index (GI), energy restriction, increase or decrease in carbohydrates, and modifications of fat or protein quality or quantity<sup>10</sup>.

Risk factors for gestational diabetes are family history of diabetes, obesity, BMI, history of GDM (recurrence rate of 30 to 50% in the subsequent pregnancy), elderly gravida, > 25 years, smoking, sedentary lifestyle. GDM complicates 7% of the pregnancies , therefore it is important to study its fetomaternal outcome.

Therefore, detection of GDM becomes an important health issue. Detection and treatment of GDM not only reduces the risk for fetus but also provides an opportunity to warn the mother to adopt preventive measures like controlled diet, exercise, and achieve ideal body weight to halt or delay the process of onset of overt diabetes. Insulin production and insulin sensitivity is normal in early pregnancy, but as pregnancy advances there is increased production of insulin. Therefore it is important to study its fetomaternal outcome.

#### Aims :

- 1 To Study the proportion of Gestational diabetes in Pregnancy.

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2 To Study maternal outcome in terms of mode of delivery, intrapartum and postpartum complication and fetal outcome in terms of maturity, occurrence of congenital anomalies and neonatal complication in cases of gestational diabetes.

**Study Place :**

This study was conducted in Shalin Hospital Ahmedabad.

**Study Duration :**

The study was carried out between the period of November 2018 to November 2019.

**Inclusion Criteria :**

All cases of pregnancies having gestational diabetes were included.

**Study Design :**

It is a prospective observational study, of 32 cases of gestational diabetes mellitus out of total 15,626 delivered cases in Shalin Hospital, Ahmedabad.

**Materials and Methods:**

Screening was done at 24 to 28 weeks of gestation, WHO has recommended 75gm2- hour OGTT. GDM is diagnosed if 2hour plasma glucose is > 140mg/dl.

**OBSERVATION AND DISCUSSION**

● **Prevalence of gestational diabetes:**

Total No of Deliveries in the Study Period	15,626
Cases of GDM	32
Prevalence	0.205%

● **Maternal complication in GDM**

Complication	Number	(%)
Hypertension	12	37.5
Polyhydramnios	6	18.8
Preterm Labour	6	18.8
Post part um Haemorrhage	4	12.5
Septicemia	1	3.1
Diabetic Ketoacidosis	0	0
Wound Gap	4	18.8
Vulvo-vaginitis	4	18.8
Thrombo phlebitis	1	3.1
IUFD	5	15.6

● **Neonatal out come**

Maturity	Number	Percentage(%)
Full-term	24	75
Preterm	8	25
Livebirth	27	84.4
Stillbirth	5	15.6
Expired	1	3.0

● **Neonatal complication**

Complication	Number	(%)
Percentage	6	18.8
Macrosomia	4	12.5
RDS	5	15.6
Hypoglycaemia	7	21.8
Hyper calcemia	1	3.0
Hyper billirubinemia	17	53.1
Congenital anomaly	2	6.2
NICUadmission>24hour	10	31.2
Neonatal death	1	3.0

· **RELATION OF AGE AND GESTATIONAL DIABETES MELLITUS**

AGE (YEARS)	NUMBER (N=32)	PERCENTAGE	
<=20	4	12%	37%
21-24	8	25%	
25-29	11	34%	63%
30-34	7	22.8%	
>=35	2	6.2%	

In the study maximum number of gestational diabetes mellitus was detected in the age group 25 - 29 years, which is, 11 in number. 7 cases were detected in the age group of 30-34 years and 2 woman was aged 37 years. Overall, 63% of patients were above age of 25 years. Average age in our study is 26.26 years. Thus, increased maternal age is a risk factor for gestational diabetes mellitus.

· **RELATION OF RESIDENCE AND GESTATIONAL DIABETES MELLITUS**

	NUMBER (N=32)	PERCENTAGE
URBAN	25	78%
RURAL	7	22%

In the study out of 32 patients which were detected to be positive for gestational diabetes mellitus, 25 patients belong to urban area, which is approx 78% and 7 patients belong to rural area, which is approx 22%.

**· DISTRIBUTION OF CASES ACCORDING TO GRAVIDA STATUS**

As evident from below data 25% patients were primigravida while 75% patients were multigravida

GRAVIDA	No.	PERCENTAGE	
	(N=32)		
Primi	8	25%	25%
Second	14	43.7%	75%
Third	6	18.7%	
Four and above	4	12.5%	

**· PAST HISTORY OF GDM**

PAST H/O GDM	NUMBER (N=32)	PERCENTAGE
YES	6	18.7%
NO	26	81.3%

6patients that are approx 18.7% patients had past history of GDM, which is risk factor for occurrence of GDM.

**CONCLUSION**

- Total 32 patients of gestational diabetes were analysed.
- Proportion of GDM in our study was 0.2%.
- 22.8% were in the age group 30-34 years. 71% patients belonged to age group less than 30 years, and 29% were in the age group of more than 30years.
- 12.5% were diagnosed in first trimester. 25% in second, and 62.5% in third trimester.
- Most common association of GDM in pregnancy was PIH, seen in 37.5% patients. Wound gap and vulvo vaginitis was present in 18.8% and septicemia in 3.1%.
- 25% neonates were preterm
- 15.6% babies were still born. Congenital anomaly was found in 2 babies. Perinatal mortality was 22.2%.

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### Bone Marrow Aspiration - One year study in tertiary care hospital at Rajkot

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**Keywords :** Bone marrow, Pancytopenia, Megaloblastic anemia

#### ABSTRACT

**INTRODUCTION :** Bone marrow aspiration (BMA) is crucial in evaluation, diagnosis, and management of anemia and other hematological disorders, especially in situations where diagnosis remains cryptic after detailed clinical history, physical examination and peripheral blood analysis. This is relatively safe and simple procedure.

**AIMS AND OBJECTIVES :** The aim of this study is to know prevalence of various hematological disorders and to compare findings of peripheral smear with diagnosis given on bone marrow aspiration.

**MATERIALS AND METHODS :** Bone marrow examination of 68 cases of suspected hematological disorders was carried out. Bone marrow aspiration was done under aseptic conditions. Slides were stained with Field's stain and where needed Leishman's stain was also done.

**RESULT :** A total of 68 cases were included in this study. The age range of cases was from 11 months to 80 years. Males were 29 (43%) and Females were 39 (57%). In our study pancytopenia was most common indication followed by anemia, thrombocytopenia & suspected malignancy. Megaloblastic anemia was most common finding on bone marrow aspiration in this study.

**CONCLUSION :** Bone marrow aspiration is relatively simple, safe, and cheap, mildly invasive technique which can diagnose many hematological and non-hematologic diseases that can be confirmed by more advanced investigations.

#### INTRODUCTION

Bone marrow examination is useful in the diagnosis of both hematological and non-hematological disorders. The two most important techniques used for the diagnosis of hematological disorders are bone marrow aspiration and trephine biopsy. Bone marrow aspiration is an invasive procedure where bone marrow is obtained through a needle aspiration for diagnostic evaluations especially cytology and stem cell harvest<sup>[1][2][3]</sup>.

Bone marrow examination was first done by Mosler in 1876 using a regular wood drill to aspirate bone marrow particles from a patient with leukemia<sup>[1]</sup>.

Bone marrow aspiration specimens are useful in further diagnostic assays including cytochemical/special stainings, immunophenotyping, microbiologic tests, cytogenetic analysis and molecular studies<sup>[1][2][3]</sup>.

It may be useful in establishing the diagnosis of storage diseases and metastatic non-haemopoietic malignancies or when a leucoerythroblastic peripheral blood picture is

present<sup>[4]</sup>. Deviations from the normal may be qualitative with abnormal cellular morphology or quantitative with aplasia, hypoplasia or hyperplasia<sup>[5]</sup>.

This study reports on age and sex distribution, the spectrum of common indications and diagnosis of bone-marrow aspiration.

#### MATERIALS AND METHODS

This was a study of one year (October 2018-September 2019) conducted in the Central Clinical Laboratory, Department of Pathology, P.D.U. Government Medical College & Hospital, Rajkot. Posterior superior iliac crest was the site of choice for Bone marrow aspiration in most of the patients and sternum in case of obese patients. Records regarding the patient detailed information, consent, clinical history, physical examination, clinical indication for the procedure and all laboratory tests findings including peripheral smear reports were recorded.

The Bone marrow aspiration material was collected and smears were prepared by wedge-spread method and

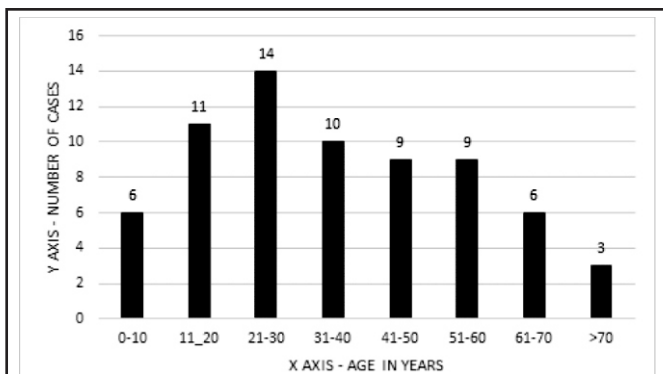
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stained with Field's stain & Leishman's stain. Wherever needed, special stains such as Myeloperoxidase stain, Periodic Acid–Schiff stain and Pearl's stain were used. All slides were examined by the expert pathologist and the data were manually collected and subsequently analyzed.

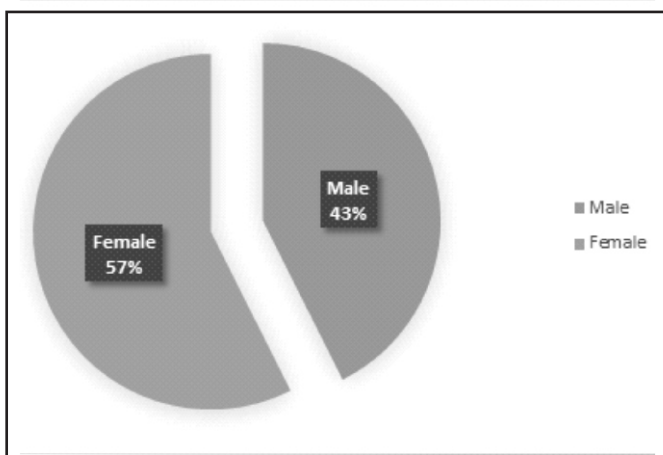
Age wise distribution of cases was done by making group of 10 years. Distribution showed that 21-30 years age group had maximum number of cases undergoing bone marrow aspiration. Out of total bone marrow aspiration cases Males were 29 (43%) and Females were 39 (57%). Male: Female ratio is 1:1.3 in this study.

### OBSERVATION AND ANALYSIS

**Table 1 : Age wise distribution of Bone Marrow Aspiration cases.**



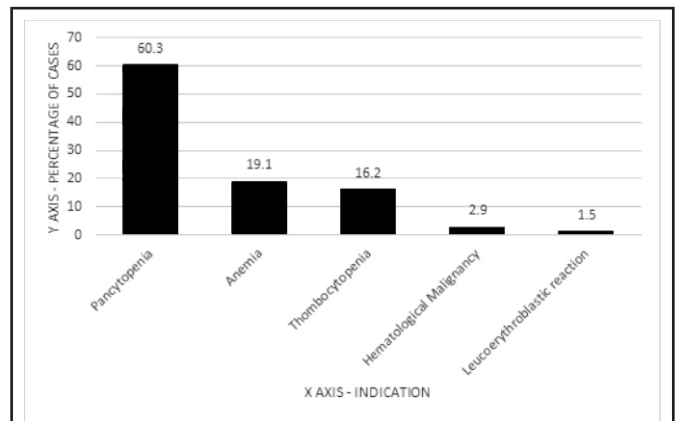
**Table 2 : Sex wise distribution of Bone Marrow Aspiration cases.**



The most frequent Indication for BMA was pancytopenia 41 cases (60.3%) followed by anemia 13 cases (19.1%), thrombocytopenia 11 cases (16.2%), malignancy 2 cases (2.9%) and leukoerythroblastic reaction 1 case (1.5%).

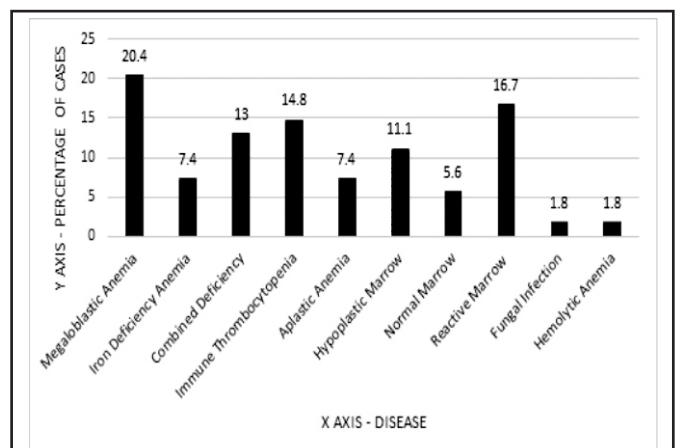
The most common marrow diagnosis was Megaloblastic anemia 11 cases (20.4%). Overall, 09 cases (16.7%) were having reactive marrow, 08 cases (14.8%) of Immune

**Table 3 Indications of Bone Marrow Aspiration**



thrombocytopenia, 07 cases (13%) of combined deficiency, 06 cases (11.1%) of hypoplastic marrow, 04 cases (7.4%) of aplastic anemia & iron deficiency anemia, 03 cases (5.6%) of normal marrow and 01 case (1.8%) of

**Table 4 : Spectrum of Non Malignant Hematological Conditions**



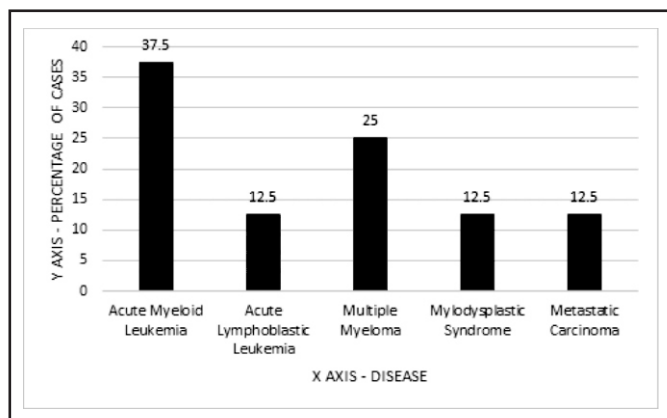
fungal infection and hemolytic anemia were found.

The most common marrow diagnosis of malignant hematological condition was acute myeloid leukemia 03 cases (37.5%). Overall, 02 cases (25%) of multiple myeloma and 01 case (12.5%) of acute lymphoblastic leukemia, myelodysplastic syndrome & metastatic carcinoma each were found.

### DISCUSSION

The bone marrow is one of the body's largest organs, constituting 4.5% of the total body weight and weighs 3375 g in an average 75 kg individual<sup>[6]</sup>. It is the principal site of hematopoiesis. BMA is a cytologic preparation of bone marrow cells obtained by aspiration of marrow and a smear of the cells. It is used to diagnose, confirm, and/or

**Table 5 : Spectrum of Malignant Hematological Conditions**



stage hematologic malignancies. It helps to evaluate cytopenias, thrombocytosis, leukocytosis, anemia, and iron status. It is also a diagnostic tool in non-hematological disorders such as storage disorders and systemic infections.

Most of the aspirate specimens were taken from the posterior superior iliac spine. The sternum was the last choice due to the possible fatal risk of damage to the great vessels during sternal puncture<sup>[7,8]</sup>. In our study 66 Bone marrow aspiration (97%) were taken from posterior superior iliac spine and 2 (3%) were from sternum.

Examination of the bone marrow is one of the most important tool in diagnosing hematological disorders. The age range of cases was from 11 months to 80 years with male to female ratio of 1: 1.3. Most common age group was 21-30 year. In a study done by Niazi and Raziq<sup>[9]</sup> in 2004 at Pakistan, the majority of the patients were from the age group 1 to 30 years.

Total 68 bone marrow aspiration cases were included in this study out of which 6 were diluted bone marrow. The most frequent indication for bone marrow aspiration was pancytopenia followed by anemia and thrombocytopenia. Similarly by Pudasaini et al.<sup>[10]</sup> in 2012 at Nepal and Bashawri<sup>[11]</sup> in 2002 at Saudi Arabia showed pancytopenia as most common indication, but in contrast studies Damulak and Damen<sup>[12]</sup> in 2012 at Nigeria and Tripathy and Dudani<sup>[13]</sup> in 2013 in India reported anemia as the most common indication for BMA cytology in their studies.

In our study, the most frequent indication for bone marrow aspiration was pancytopenia 41 cases (60.3%) out of which 1 was diluted. Megaloblastic anemia were most common pathological findings 09 cases (22.5%), which is comparable to other studies. In a study done by Gayathri and Rao<sup>[14]</sup> in 2011 at India, megaloblastic anemia was the

most common cause of pancytopenia and was the most common finding in BMA. Others 06 cases (15%) of hypoplastic marrow, 5 cases (12.5%) were having reactive marrow, 04 cases (10%) of aplastic anemia, combined deficiency and iron deficiency anemia each, 02 cases (5%) of acute myeloid leukemia, multiple myeloma each and 01 case (2.5%) of acute lymphoblastic leukemia, myelodysplastic syndrome, normal marrow and fungal infection each were found.

Anemia was second most common indication of bone marrow with 13 cases (19.1%) in our study out of which 3 were diluted. Most common cause of anemia was combined deficiency 3 cases (30%) same as reactive marrow (30%) followed by megaloblastic anemia 2 cases (20%) followed by hemolytic anemia and normal marrow each 1 case (10%). However, in a study done by Ahmed et al<sup>[15]</sup> in 2011 at Ravalpindi, 23.8% of cases were diagnosed as iron deficiency anemia. Although the most common anemia in our country is due to iron deficiency, there is no need of BMA for diagnosis and management. Hence, the prevalence of dimorphic and pure megaloblastic anemia is a higher side in the study. Thus, bone marrow examination could be used effectively in most cases to determine the cause of anemia.

Thrombocytopenia was third most common indication of bone marrow aspiration with 11 cases (16.2%) out of which 1 was diluted. Most common cause of thrombocytopenia was immune thrombocytopenia 8 cases (80%) followed by normal & reactive marrow 01 case (10%) each. ITP is usually chronic in adults<sup>[16]</sup> in 2002 at England and the probability of durable remission is 20-40%<sup>[17]</sup> in 2006 at Netherlands.

Acute myeloid leukemias were most common malignant disorder seen in our study accounting for 4.1%. Same as Acute myeloid leukemias were the common cause of haematological malignancies in a study conducted by Atla BL et al.<sup>[18]</sup> in 2015 at India. Multiple myeloma was second most common malignancy accounting for 2.9%. Our study was comparable to that of Ranabhat S et al.<sup>[19]</sup> in 2017 at Nepal in their study multiple myeloma constituting 13.3%. Acute lymphoblastic leukemia was third common malignancy (1.4%). Same as Egesie et al.<sup>[20]</sup> in 2009 at Niger, Kibria et al.<sup>[21]</sup> in 2010 at Faridpur and Gayathri and Rao<sup>[10]</sup> in 2011 at India had reported acute myeloid leukemia more common than ALL.

In our study, metastatic deposits were seen in 1.4% of cases. Adewoyin AS et al<sup>[22]</sup> in 2014 at India in their study had seen marrow carcinomatosis in 7.9% cases. D Ghartimagar et al<sup>[23]</sup> in 2012 at Nepal in their study showed metastasis in 6%, normal marrow findings were



seen in 6.8% cases. Normal marrow study was seen in 3.8% cases in the study of Atla et al.<sup>[18]</sup> in 2015 at India while 10.5% cases had a normal marrow in study by Pudasaini et al.<sup>[9]</sup> in 2012 at Nepal.

### CONCLUSION

Bone marrow examination is an important and easy investigation to arrive at the confirmatory diagnosis of hematological disorders. The procedure remains a veritable tool in the diagnosis and management of a wide range of hematological and some non-hematological diseases included as the cause of pancytopenia.

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## Original Articles

### "Is upper ureteric kink a real nightmare for the Urologists while performing Flexible Ureterscopy (fURS)? A single center experience of 15 cases of Retrograde Intra Renal Surgery (RIRS) in unstented patients with upper ureteric kink".

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**KEY WORDS :** UU Kink, RIRS, FURS, PCNL, DLC, SFR, RGP

#### ABSTRACT:

**INTRODUCTION:** As a successful Initial Puncture defines the success of Percutaneous Nephro Lithotripsy (PCNL), similarly successful deployment of the Flexible Ureterscope (fURS) defines the success of Retrograde Intra Renal Surgery (RIRS). We report our experience of 15 cases of RIRS in upper ureteric kink in unstented patients and evaluate the feasibility, technical difficulties, outcome and follow up. **METHODS:** Out of 16 patients with upper ureteric kink, RIRS could be performed in 15 patients (94%). Intra operative maneuvers required, Stone free rates (SFR) at 1 month post-operative follow up and number of auxiliary procedures required was noted. **RESULTS:** In 13 patients (87%), sensor guide wire was placed through semi-rigid Ureterscope. In 2 patients (13%), guide wire was negotiated across the ureteric kink with fURS placed distal to ureteric kink. We placed Double Lumen Ureteric Catheter and safety guide wire in 11 patients (69%) which helped keeping the ureter straight. SFR after 1st procedure was in 10/15 patients (67%) and in 14/15 patients (94%) after 2nd procedure. SFR after 1st RIRS in stone burden < 2 cm is 9/11 (82%) as compared to ¼ (25%) in stone burden > 2 cm ( $p < 0.01$ ). 5/15 patients (33%) developed contrast extravasation, successfully managed with DJ stenting. No serious complication was noted. **CONCLUSION:** RIRS is feasible and safe for upper tract calculi in patients with ureteric kink for stones < 2cm. Maneuvers such as Retro Grade Pyelography (RGP), Double Lumen Ureteric catheter, safety guide wire improve the success rate.

#### INTRODUCTION

"Well begun is half done." This holds true in Urology especially in surgeries like Percutaneous Nephrolithotomy (PCNL) and Retrograde Intra Renal Surgery (RIRS). As a successful Initial Puncture is vital for a successful PCNL, successful deployment of Flexible Ureterscope (fURS) across the ureter defines the success of RIRS. Anatomical difficulties such as upper ureteric kink however sometimes challenge the Urologist. Manoeuvres such as using a Double Lumen Ureteric Catheter, parking a safety guide wire, placing guide wire with the help of flexible ureterscope may be required. We report our experience of 15 cases of RIRS in upper ureteric kink in unstented patients and evaluate the feasibility, technical difficulties and outcome and follow up of RIRS in such cases.

#### AIM

To evaluate the feasibility and success of Retrograde Intra Renal Surgery (RIRS) in unstented patients with Upper ureteric kink.

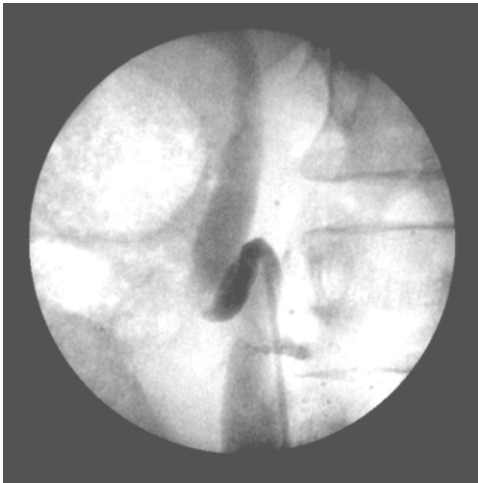
**Ethics:** The study protocol was reviewed and approved by ethics committee of our hospital. Each patient was informed about the merits and demerits of RIRS and was given the option between PCNL and RIRS. All patients opted for RIRS and informed consent was taken.

#### MATERIALS AND METHODS

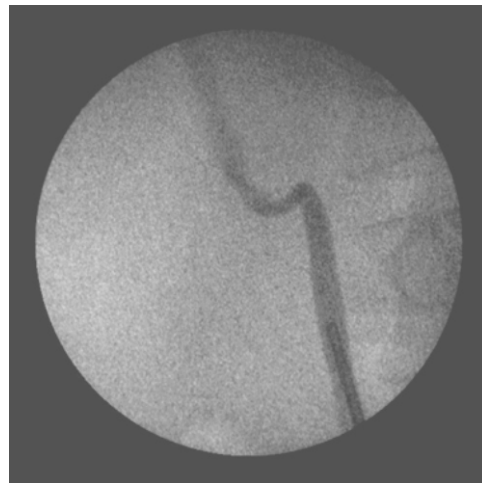
Out of 96 patients operated by RIRS for single/multiple renal and/or upper ureteric stones at our institute between February 2017 to December 2017, 16 patients were identified with upper ureteric kink by pre-operative imaging with NCCT KUB Scan and were confirmed on intra operative Retro Grade Pyelography (RGP). RIRS could be successfully performed in 15/16 patients while 1 patient required Open Ureterolithotomy. The data included clinical history, pre-operative work up, NCCT KUB Scan and Urine culture. Intra operative events such as Retro Grade Pyelography (RGP), technical difficulties faced and the maneuvers required to overcome them were noted. Immediate post-operative course and follow up at 1 month with repeat NCCT KUB were noted.

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**Figure 1: Fistulous tract between esophagus and pleura**



**Figure 2: Upper ureteric kink on RGP**



**Figure 3: Placement of guide wire across the ureteric kink with help of flexible Ureteroscope.**



**Figure 4: Ureteric kink on CT Urography**



Patients with age > 12 years to geriatric age, with upper ureteric kink, identified pre operatively on imaging studies (NCCT KUB, Intra Venous Urography) and confirmed per operatively on RGP were included. The stone burden was > 5 mm to < 35 mm with single/ multiple renal and /or upper ureteric stones and previous history of stone surgery. Paediatric cases, anatomically abnormal kidneys and stag horn calculi were excluded.

Routinely we don't pre stent the patients for RIRS. Cysto-Urethroscopy followed by semi rigid 4.5 French (Fr) Ureterorenoscopy (URS) was done. Balloon dilatation was required for narrow ureteric orifice or tight ureter. Upper ureteric kink was identified pre operatively by NCCT KUB or IVU and confirmed intra operatively by RGP with undiluted non-ionic water soluble radio-opaque contrast Iohexol (Figure 1, 2). In few cases, when it was difficult to place a guide wire across the ureteric

kink, we used Terumo glide wire. In few instances, putting a guide wire was possible only with the flexible ureteroscope (Figure 3). Next, we passed a Double Lumen ureteric Catheter (DLUC) of 10Fr with floppy tip over the guide wire. Routinely we don't use safety guide wire but in cases with ureteric kink, we preferred two guide wires especially both sensor guide wires.

Then a Ureteric Access Sheath (UAS) of 9.5Fr/11.5 Fr was back-loaded over the guide wire. In cases where the ureter was tight, back loading the flexible ureteroscope (fURS) without UAS was performed. The settings for stone dusting were 0.5 to 0.8 Joules and 12 to 15 Hertz. Once the stone was pulverized, we rechecked all the calyces with fURS and performed RGP again to rule out contrast extravasation suggestive of ureteric or fornyceal perforation. Double J Stent was placed at the end of procedure.

**Table 1: Stone distribution according to the stone burden, number of stones and stone location**

SR. NO.	STONE BURDEN (CM)					HF VALUE		NUMBER		LOCATION OF STONE					
	< 1	1 1.5	> 1.5 2	> 2 3	> 3	<900	>900	SIN GLE	MUL TIPLE	UPPER CALYX	MID CALYX	LOWER CALYX	MULTIPLE CALYCES	PELV IS	UPPER URETER
1	1	0	0	0	0	0	1	1	0	0	0	0	0	0	1
2	0	0	1	0	0	0	1	0	1	0	0	0	0	0	0
3	1	0	0	0	0	1	0	1	0	0	0	0	0	0	1
4	0	1	0	0	0	0	1	0	1	0	0	0	1	0	0
5	0	0	0	1	0	0	1	1	0	0	0	1	0	0	0
6	0	0	0	1	0	0	1	0	1	0	0	0	1	0	0
7	0	0	0	1	0	0	1	0	1	0	0	0	1	0	0
8	0	0	0	0	1	0	1	0	1	0	0	0	0	1	0
9	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0
10	1	0	0	0	0	0	1	1	0	0	0	1	0	0	0
11	0	1	0	0	0	0	1	1	0	0	0	0	0	0	1
12	0	1	0	0	0	0	1	1	0	0	0	0	0	1	0
13	0	1	0	0	0	0	1	1	0	0	0	0	0	1	0
14	0	0	1	0	0	0	1	0	1	0	0	0	0	0	0
15	1	0	0	0	0	0	1	0	1	0	1	0	0	0	0
16	0	1	0	0	0	0	1	1	0	0	0	0	0	0	1
<b>SUM</b>	<b>4</b>	<b>5</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>14</b>	<b>8</b>	<b>8</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>4</b>

**Table 2: SFR according to stone burden**

NUMBER OF PATIENTS OPERATED BY RIRS	STONE BURDEN (CM)				
	< 1	1-1.5	> 1.5 -2	> 2-3	> 3
TOTAL PATIENTS	4	4	3	3	1
PATIENTS WITH RESIDUAL STONES	0	1	1	2	1
PATIENTS WITH STONE CLEARANCE	4	3	2	1	0
<b>STONE FREE RATE</b>	<b>100%</b>	<b>75%</b>	<b>67%</b>	<b>33.30%</b>	<b>0%</b>

**RESULTS**

Post operatively, the patients were monitored for haematuria, flank pain and signs of septicaemia such as fever, chills or hypotension. All the patients were discharged after 36 to 48 hours. All patients were followed up with NCCT KUB after 4 weeks to evaluate for residual stones and peri-nephric or peri-ureteric collection to rule out residual injury. Re- RIRS is performed for clinically significant residual fragment of size > 3mm. DJ stent is removed under local anaesthesia in case of complete clearance.

STATISTICS : Data evaluation was done under statistician's guidance. Proportion test was used to calculate the p value (p <0.01 is significant).

Out of 96 patients operated by RIRS between February to December 2017, 16 patients (17%) were identified with upper ureteric kink on pre-operative NCCT KUB. Among them, 12 patients (75%) were males while 4 were females (25%). 11 patients (69%) were of age between 25-50 years, 1 patient (6%) was < 25 years while 4 patients were >50 years (25%). 2 patients had positive urine culture pre operatively (12.5%). 3 patients (19%) had Ischemic Heart Disease and were on anti-coagulants pre operatively.

Stone distribution according to the stone burden, number of stones and stone location was as follows (Table 1). 14 stones had Hounsfield value (HF) > 900 whereas 2 had HF < 900. The mean stone size was 15 mm. RIRS could be performed in 15 out of 16 patients (94%) either as a

preliminary or staged procedure. In 1 patient, the kink was so severe that even a guide wire could not be negotiated following which Open Ureterolithotomy was performed. 4 patients (25%) had to be stented and RIRS was performed after 2 weeks.

In 13 patients (87%), sensor guide wire was placed through semi-rigid Ureteroscope. In 2 patients (13%), guide wire was negotiated across the kink with the help of fURS placed distal to ureteric kink. We placed Double Lumen Ureteric Catheter and safety guide wire in 11 patients (69%) which helped keeping ureter straight. 9.5 Fr/11.5 Fr Ureteric Access Sheath was deployed in 9 patients whereas it could not be placed in 6 patients (38%). In all 4 patients with ureteric kink and upper ureteric stones, the stone was impacted and semi rigid Ureteroscopy could not be performed and RIRS had to be done.

Stone free rate (SFR) Analysis was as follows: 1 patient required open Ureterolithotomy whereas RIRS was performed in 15 patients. SFR after 1st procedure was in 10/15 patients (67%) and in 14/15 patients (94%) after 2nd procedure. 1 patient required 3rd procedure. SFR according to stone burden is shown in Table 2. SFR after 1st RIRS in stone burden < 2 cm is 9/11 (82%) compared to SFR of ¼ (25%) in stone burden > 2 cm ( $Z=2.31$ ,  $P=0.02$ ,  $p < 0.01$ ). The mean residual stone size was 9.2 mm. SFR among the pre stented and staged patients was in ¾ (75%) versus 7/11(64%) among unstented patients ( $Z=0.43$ ,  $P=0.66$ ,  $p > 0.01$ ).

5/15 patients (33%) developed contrast extravasation suggestive of mucosal injury on RGP. DJ stent was placed in all patients. Post operatively, 2/15 patients (13%) developed minimal hematuria and 2/15 patients (13%) had early post-operative fever/hypotension which was managed conservatively. No patient required Intensive Care or any serious complication. On follow up NCCT KUB, no patient had peri nephric or peri ureteric collection which ruled out residual ureteric or renal injury. DJ stent was removed after 1 month.

## DISCUSSION

Upper ureteric kinks are described in literature. Kamo M et al evaluated 176 CT Scan images and identified Ureteric kinking in around 40 % of patients. [1] Ureteric kinks are identified at or above the level of Crossing Point where ureter crosses over Gonadal vein. Imaging modalities such as NCCT KUB, IVU, RGP, CT Urography and Magnetic Resonance Urography can be used to identify abnormal deviations of ureter including ureteric kinks (Figure 4). [2, 3] Unfortunately, limited literature is available about ureteric kink and no

grading or classification system for diagnosing the tortuosity of the ureter exists till date. No case series of RIRS in upper ureteric kink is reported yet. We performed Retrograde Pyelography in all patients identified with ureteric kink on pre-operative NCCT KUB or IVU.

Semi rigid Ureteroscopy before the fURS helped in ureteric dilatation, identifying and dusting any ureteric stone and discovering any surprise pathology like Transitional Cell Carcinoma of ureter. In difficult fURS, DLUC 10 French is yet available very helpful and serves several purposes: ureteric dilatation, performing RGP, parking safety guide wire and straightening the ureteric kink. We preferred two sensor guide wires as Terumo tip of the sensor guide wire prevents mucosal perforation whereas zebra shaft keeps the ureter straight, facilitates repeated introduction of fURS and guide wire doesn't slip out easily. We used UAS of 9.5 Fr/11.5 Fr as successful UAS placement ensures better stone free rates and decreases the ureteric mucosal trauma, intra pelvic pressures, risk of septicemia and damage to the fURS. [4, 5]

Septicemia related events such as fever, hypotension are known complication post RIRS as reported by Berardinelli F et al in 31/403 patients (7-8%). [6] In our series, 2/15 patients (13%) developed early post-operative fever managed conservatively ( $Z=0.64$ ,  $P=0.53$ ,  $p > 0.01$ ). However, no major septicemia complication was noted.

SFR in RIRS is subject to multiple parameters such as stone burden, location, number, hardness, composition, calyceal and ureteric anatomy, use of UAS etc. In patients with upper ureteric kink, stone clearance after fURS is affected due to difficult guide wire and UAS placement, difficult entry and re-introduction of fURS across ureteric kink, difficult stone retrieval with zero tip basket, difficult maneuvering with laser fiber and difficult ureteric stenting.

Sari S et al [7] reported SFR of 74% after 1st RIRS for stones < 2 cm as compared to 82% in our series with ureteric kink ( $p > 0.01$ ). Javanmard Breported SFR of 19/21 (90.4 %) after 1st RIRS [8] as compared to SFR of 82% (9/11) in our series with kink after 1st RIRS for stones < 2cm ( $Z=0.65$ ,  $p>0.01$ ). Thus, similar SFR were achieved for stone size < 2 cm in patients with ureteric kink. For stones > 2 cm, Atis G[9] reported SFR after 1st RIRS in 108/146 (74%) compared to ¼ (25 %) in our series with kink ( $Z=2.23$ ,  $P=0.026$ ,  $p < 0.01$ ). Thus, statistically low SFR is achieved in stones > 2cm with upper ureteric kink ( $p < 0.01$ ). After 2nd RIRS, SFR reported by Atis G is in 134/146 (92%) as compared to ¾ (75%) ( $Z=0.77$ ,  $P=0.44$ ,  $p > 0.01$ ). This signifies similar stone clearance after auxiliary procedure in stones >2 cm. In our published series of 131 patients operated by RIRS [10], we report SFR in 87/108 patients (81%) for stone burden < 2 cm

without ureteric kink, similar to 9/11 patients (81%) with stone burden < 2 cm and ureteric kink ( $p > 0.01$ ). Whereas, SFR in stone burden > 2 cm in patients with ureteric kink is in 1/4 patients (25%) which is significantly low as compared to SFR in 12/23 patients (52%) without kink for stone burden > 2 cm ( $p < 0.01$ ). The complication rate of fever/chills/ hypotension in our series of 131 patients was in 8/131 patients (6%) as compared to 2/15 (13%) patients with ureteric kink ( $p > 0.01$ ).

Out of 4 patients who required to be stented and staged, SFR was noted in 3/4 (75%) versus 7/11 patients (7/11= 64%) in unstented patients ( $Z=0.43$ ,  $P=0.66$ ,  $p>0.01$ ). Thus, no significant difference in SFR was noted among the pre-stented and staged patients versus non-stented patients in ureteric kink. Also, ureteric stenting is technically difficult in ureteric kink. Thus, pre DJ stenting does not improve stone clearance in ureteric kink as the kink reappears after stent removal.

The limitations of the study are single center small size study, limited number of patients, lack of adequate literature on the anatomy and pathology of upper ureteric kinks and lack of comparison between RIRS v/s PCNL in Upper Ureteric kink. In the future, an anatomical or radiological classification for ureteric anatomy would guide pre-operative planning and predicting the success in terms of SFR after RIRS.

### CONCLUSION

RIRS is a feasible and safe modality for upper tract calculi in patients with upper ureteric kink. Maneuvers such as RGP, use of DLUC, safety guide wire improve the success in technically difficult fURS. Successful and comparable SFR have been achieved by RIRS in patients with ureteric kink for stone burden < 2 cm. With auxiliary procedure, successful stone clearance can be achieved in stone burden < 2.0 cm. Owing to the low complication rate, RIRS is a better option as compared to PCNL even in ureteric kink. Ureteric stenting is technically difficult and prior stenting does not improve the stone clearance in patients with ureteric kink.

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## Original Articles

### A Comparative Study of Macular Thickness in Primary open Angle Glaucoma Patients and Normal Patients.

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**KEY WORDS :** Macular thickness, Glaucoma, Optical coherence tomography

#### ABSTRACT

**Aim :** To compare difference of macular thickness using optical coherence tomography (OCT) in primary open angle glaucoma (POAG) patients and normal subjects..

#### Materials and methods :

This Observational case control study included primary open angle glaucoma (POAG) patients (n=60 eyes) and healthy subjects in the control group (n=60 eyes). All subjects underwent detailed history, general examination, and systemic examination. Complete ocular examination included best corrected visual acuity (BCVA), slit lamp examination, intraocular pressure (IOP), gonioscopy, dilated fundus biomicroscopy. Visual field analysis was done using Haag-Streit Octopus 900 machine.

Optical coherence tomography imaging machine was performed using Topcon 3D OCT machine, version 8.42003.01. In both these groups, parameters analysed were macular thickness and macular volume.

#### Results :

The POAG group had significantly decreased values of macular thickness (11.3%) macular thickness in POAG as compared to control ( $265.09 \pm 12.60$  vs.  $235.16 \pm 7.64$ ,  $p < 0.001$ ). and macular volume ( $7.68 \pm 0.46$  vs.  $7.00 \pm 0.48$ ,  $p < 0.001$ ). Thus, macular thickness and macular volume parameters may be used for making the diagnosis of glaucoma, especially in patients with abnormalities of disc.

#### INTRODUCTION

Primary open angle glaucoma is a chronic, progressive optic neuropathy in adults in which there is a characteristic acquired atrophy of the optic nerve and loss of retinal ganglion cells and their axons<sup>[1]</sup>. Because 50% of the RGCs are located within the macula<sup>[2]</sup> and the macular shape is generally less variable than the ONH, macular thickness assessment has been considered for evaluating structural changes of glaucoma. High-resolution imaging of retinal structure is done through optical coherence tomography.

Zeimer et al<sup>[3]</sup> first suggested imaging of the macula as a potential location for glaucoma evaluation. Macular thickness measurements by optical coherence tomography (OCT) have been shown in previous studies

to be significantly thinner in glaucomatous eyes compared to healthy eyes<sup>[4]</sup>

#### RETINA

Retina is a thin membrane extending from the optic disc to the ora serrata in front. It varies in thickness from 0.4 mm near the optic nerve to 0.15 mm anteriorly at the ora serrata.<sup>[5]</sup>

#### Macular thickness

The macula contains over 50% of all retinal ganglion cells and is an ideal area for detection of early cell loss and changes over the time because of high cell density.<sup>[5]</sup> In the macular area, ganglion cells are arranged in 4 to 6 layers making up 30 to 35% of retinal macular thickness, so that the loss of macular ganglion cells results in significant retinal or retinal nerve fiber layer thinning.

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## OPTICAL COHERENCE TOMOGRAPHY

OCT uses low-coherence interferometry to produce a two-dimensional image of optical scattering from internal tissue microstructures in a way that is analogous to ultrasonic pulse-echo imaging..

The diagnosis and management of glaucoma are currently difficult clinical problems. Intraocular pressure measurements often do not adequately predict the progression of glaucoma. [6]

## METHODOLOGY

**Method of collection of data :** Data was collected after approval from Institutional Review Board(IRB) ,government medical college.

**Study Area :** Department of Ophthalmology and Government Medical College.

**Sample Size :** 60 patients-30 patients of primary open angle glaucoma and 30 normal patients(control group).

**Study period :** Study was carried out over a period of 6 months.

**Ethical consideration :** Informed and written consent from each participant was taken.

**Statistical analysis :** Comparison between the values of macular thickness between primary open angle glaucoma patients and normal patients will be done .Independent Student's t test and chi-square ( $\chi^2$ ) test were used for statistical analysis.

## Inclusion criteria

- Patients age more than 30 years of either sex.
- Patients who will be ready for written and inform consent.
- A case of primary open angle glaucoma and normal subjects(control group).

## Exclusion criteria

- Patients who are not ready to give written and inform consent.
- Patients with any other retinal disease.
- Patients with any other associated ocular disease or deformity that hampers posterior segment evaluation by oct like dense cataract,corneal opacity.
- Patients on steroid therapy and on any other medications known to affect retina.

## MATERIAL

- The study was performed on patients diagnosed as primary open angle glaucoma and normal patients(control group).

• All patients underwent :

1. Visual assesment using Snellen's visual acuity chart.
2. Examination of anterior segment in detail using slit lamp biomicroscopy.
3. Refraction.
4. Intraocular pressure measurement using goldmann applanation tonometry.
5. Gonioscopy using 3 mirror lens.
6. Perimetry by haag streit octopus 900 machine.
7. Dilated fundus examination was done using 90 D lens on slit lamp biomicroscope. The participant's both eyes were dilated using tropicamide (0.8%)+ phenylephrine (5%). Dilated fundus findings were noted which included media,disc ,macula,blood vessels and background.
8. All patients then underwent macular thickness evaluation using optical coherence tomography. OCT was done using TOPCON 3D OCT machine, version 8.42003.01.

## OBSERVATION

### DEMOGRAPHIC CHARACTERISTICS :

The demographic characteristics (age and sex) of two groups is summarised as summarised in Table I and also shown in Figure I and II, respectively. The age of control and POAG ranged from 34-77 yrs and 34-65 yrs respectively with mean ( $\pm$  SD)  $50.93 \pm 9.79$  yrs and  $52.53 \pm 7.78$  yrs respectively and median 49 yrs and 54 yrs respectively. The mean age of POAG group was slightly higher than control group. Comparing the mean age of two groups, Student's t test showed similar age between the two groups ( $50.93 \pm 9.79$  vs.  $52.53 \pm 7.78$ ,  $t=0.70$ ,  $p=0.486$ ) i.e. did not differ significantly

Further, in control group, there were 14 (46.7%) females and 16 (53.3%) males whereas it were 15 (50.0%) and 15 (50.0%) in POAG group. Comparing the sex proportion (M/F) of two groups,  $\chi^2$  test showed similar sex proportion between the two groups ( $\chi^2=0.07$ ,  $p=0.796$ ) i.e. also not differ significantly.

## SECONDARY OUTCOME MEASURES

### I. RIGHT EYE

The secondary outcome measures (Best corrected visual acuity , Slit lamp examination, Intraocular Pressure, MEDIA, CDR, MACULA, Blood vessels, Background, gonioscopy ) of two groups at right eye is summarised in Table II and also shown in Fig.III-VII. Comparing the



**Table I: Demographic characteristics (Mean ± SD) of two groups**

Variable	Control(n=30) (%)	POAG (n=30) (%)	t/ $\chi^2$ value	p value
Age (yrs)	50.93 ± 9.79	52.53 ± 7.78	0.70	0.486
Sex:				
Female	14 (46.7)	15 (50.0)	0.07	0.796
Male	16 (53.3)	15 (50.0)		

Age of two groups was compared by Student's t test whereas sex was compared by  $\chi^2$  test.

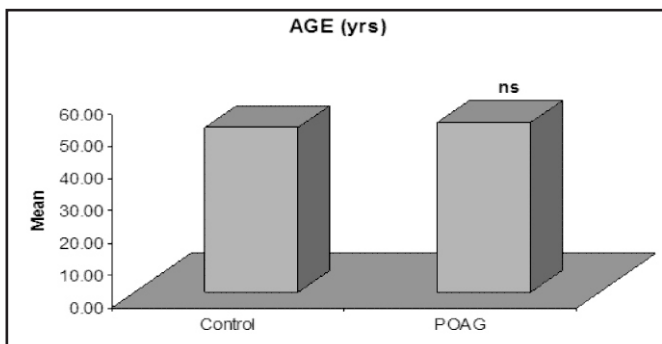
**Table II : Secondary outcome measures (Mean ± SD) of two groups at right eye**

Variable	Control(n=30) (%)	POAG (n=30) (%)	t/ $\chi$ value	p value
BCVA:				
5/60	0 (0.0)	3 (10.0)	30.64	<0.001
6/12	3 (10.0)	2 (6.7)		
6/18	5 (16.7)	5 (16.7)		
6/24	3 (10.0)	5 (16.7)		
6/36	1 (3.3)	7 (23.3)		
6/6	16 (53.3)	0 (0.0)		
6/60	1 (3.3)	8 (26.7)		
6/9	1 (3.3)	0 (0.0)		
SLE:				
WNL	30 (100.0)	30 (100.0)	NA	NA
IOP (mmHg)	13.73 ± 1.74	18.77 ± 1.89	10.74	<0.001
MEDIA :				
CLEAR	16 (53.3)	11 (36.7)	4.96	0.084
IMC	14 (46.7)	15 (50.0)		
PSPH	0 (0.0)	4 (13.3)		
CDR	0.37 ± 0.06	0.71 ± 0.08	18.01	<0.001
MACULA :				
DULL FR	5 (16.7)	7 (23.3)	0.42	0.519
FR+	25 (83.3)	23 (76.7)		
B/V:				
NORMAL	30 (100.0)	30 (100.0)	NA	NA
B/G:				
NORMAL	30 (100.0)	30 (100.0)	NA	NA
I/G:				
OPEN	30 (100.0)	30 (100.0)	NA	NA
ANGLE				

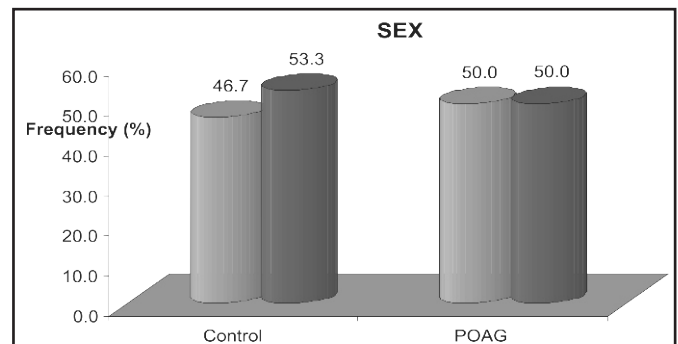
IOP and CDR of two groups were compared by Student's t test whereas .

BCVA, MEDIA, MACULA were compared by  $\chi^2$  test.

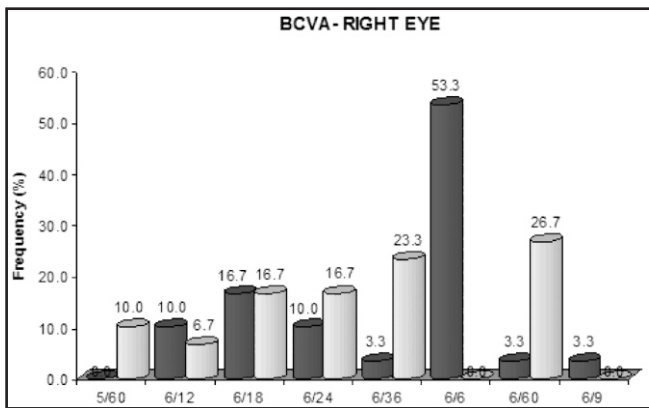
**Fig. I. Mean age of two groups**



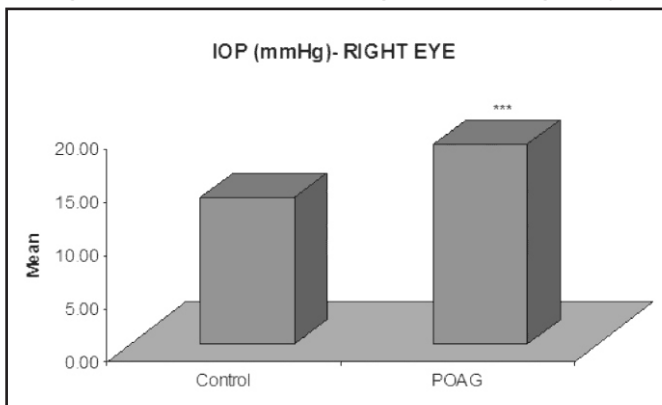
**Fig. II. Distribution of sex ratio of two groups.**



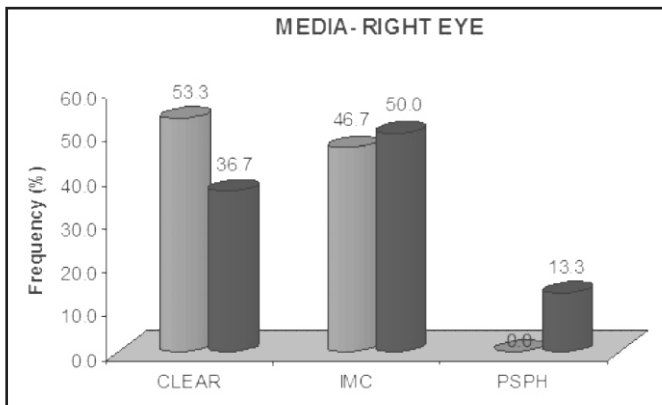
**Fig. III. Distribution of BCVA of two groups at right eye.**



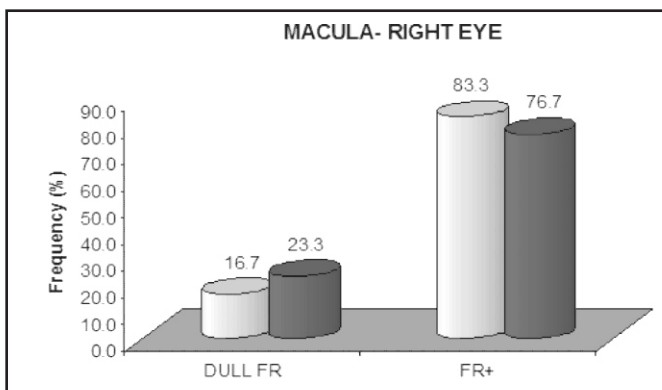
**Fig. IV. Mean IOP of two groups at right eye**



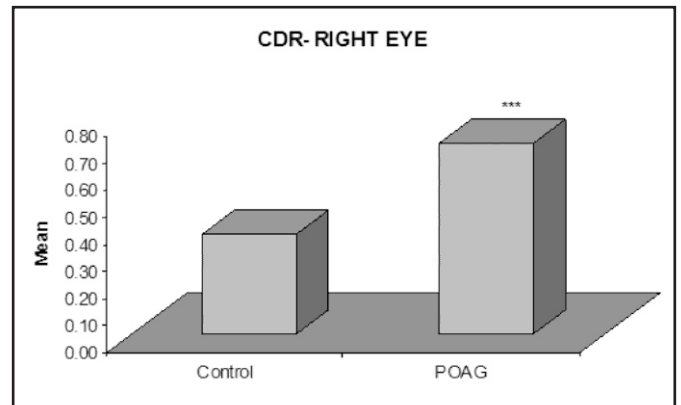
**Fig.V. Distribution of media of two groups at right eye**



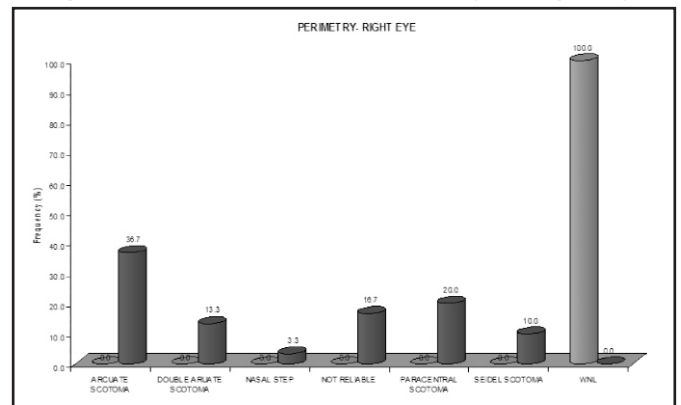
**Fig. VI. Distribution of macula of two groups at right eye.**



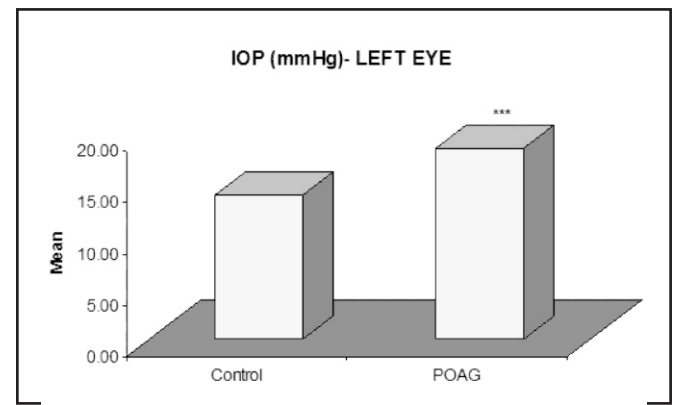
**Fig. VII. Mean CDR of two groups at right eye**



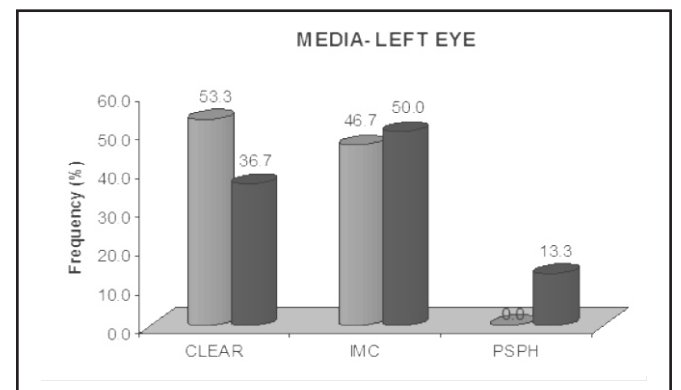
**Fig. VIII: distribution of perimetry in right eye**



**Fig. IX. Mean IOP of two groups at left eye.**



**Fig. X. Distribution of media of two groups at left eye.**

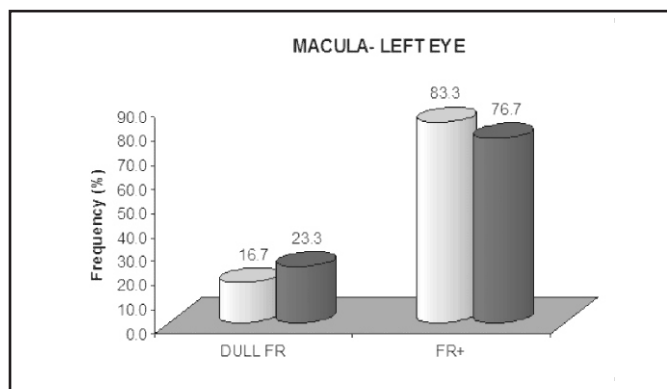


**Table III: Distribution of perimetry of two groups at right eye**

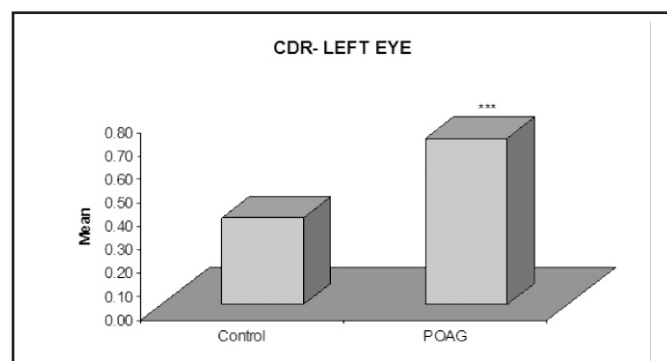
Perimetry	Control(n=30) (%)	POAG (n=30) (%)	$\chi^2$ value	p value
ARCUATE	0 (0.0)	11 (36.7)	60.00	<0.001
SCOTOMA				
DOUBLE	0 (0.0)	4 (13.3)		
ARUATE SCOTOMA				
NASAL STEP	0 (0.0)	1 (3.3)		
NOT RELIABLE	0 (0.0)	5 (16.7)		
PARACENTRAL SCOTOMA	0 (0.0)	6 (20.0)		
SEIDEL SCOTOMA	0 (0.0)	3 (10.0)		
WNL	30 (100.0)	0 (0.0)		

Perimetry of two groups were compared by  $\chi^2$  test.

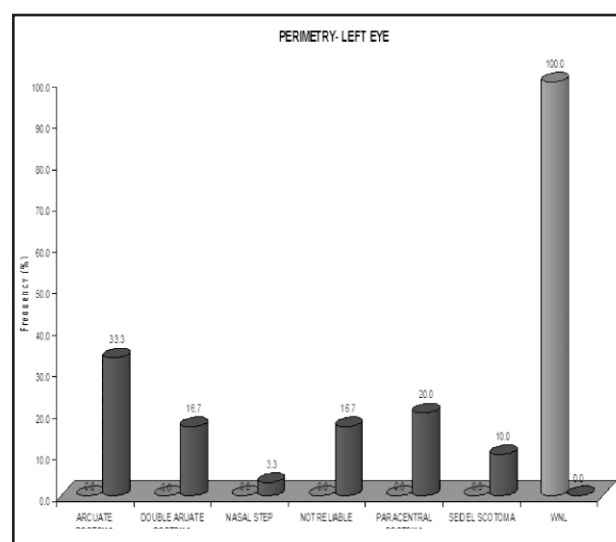
**Fig. XI. Distribution of macula of two groups at left eye**



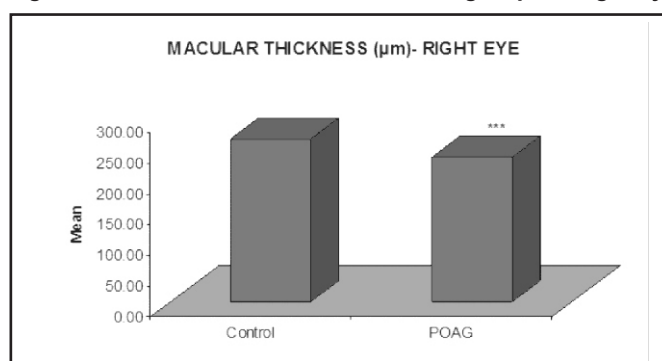
**Fig. XII. Mean CDR of two groups at left eye.**



**Fig. XIII. Distribution of perimetry of two groups at left eye**



**Fig. XIV. Mean macular thickness of two groups at right eye.**

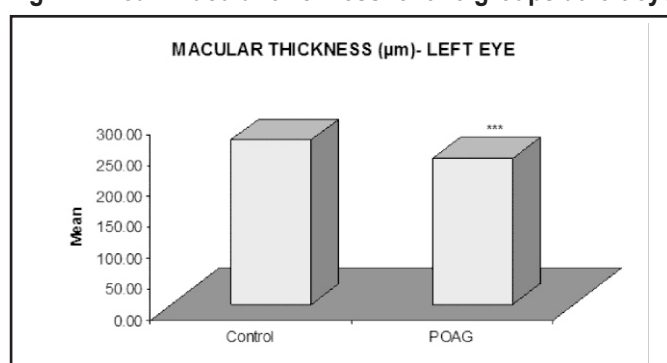


**Table IV: Secondary outcome measures (Mean ± SD) of two groups at left eye**

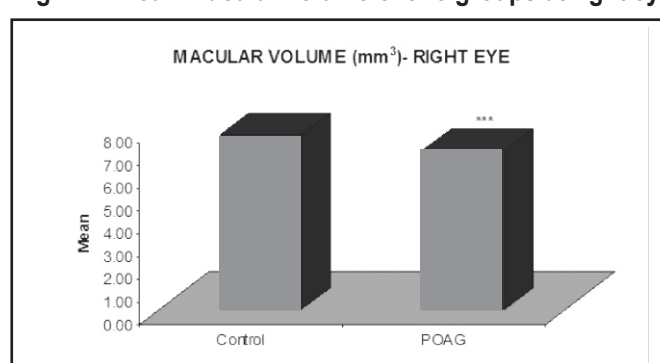
Variable	Control(n=30) (%)	POAG (n=30) (%)	t/ $\chi$ value	p value
BCVA:				
5/60	0 (0.0)	2 (6.7)	33.61	<0.001
6/12	3 (10.0)	2 (6.7)		
6/18	5 (16.7)	3 (10.0)		
6/24	3 (10.0)	4 (13.3)		
6/36	1 (3.3)	9 (30.0)		
6/6	16 (53.3)	0 (0.0)		
6/60	1 (3.3)	10 (33.3)		
6/9	1 (3.3)	0 (0.0)		
SLE:				
WNL	30 (100.0)	30 (100.0)	NA	NA
IOP (mmHg)	14.07 ± 1.51	18.60 ± 1.43	11.96	<0.001
MEDIA:				
CLEAR	16 (53.3)	11 (36.7)	4.96	0.084
IMC	14 (46.7)	15 (50.0)		
PSPH	0 (0.0)	4 (13.3)		
CDR	0.37 ± 0.06	0.71 ± 0.09	17.46	<0.001
MACULA:				
DULL FR	5 (16.7)	7 (23.3)	0.42	0.519
FR+	25 (83.3)	23 (76.7)		
B/V:				
NORMAL	30 (100.0)	30 (100.0)	NA	NA
B/G:				
NORMAL	30 (100.0)	30 (100.0)	NA	NA
I/G:				
OPEN ANGLE	30 (100.0)	30 (100.0)	NA	NA

IOP and CDR of two groups were compared by Student's t test whereas BCVA, MEDIA, MACULA were compared by  $\chi^2$  test.

**Fig. XV. Mean macular thickness of two groups at left eye**



**Fig. XVI. Mean macular volume of two groups at right eye.**



**Table V: Distribution of perimetry of two groups at left eye**

Perimetry	Control(n=30) (%)	POAG (n=30) (%)	t/ $\chi$ value	p value
ARCUATE SCOTOMA	0 (0.0)	10 (33.3)	60.00	<0.001
DOUBLE ARUATE SCOTOMA	0 (0.0)	5 (16.7)		
NASAL STEP	0 (0.0)	1 (3.3)		
NOT RELIABLE	0 (0.0)	5 (16.7)		
PARACENTRAL SCOTOMA	0 (0.0)	6 (20.0)		
SEIDEL SCOTOMA	0 (0.0)	3 (10.0)		
WNL	30 (100.0)	0 (0.0)		

Perimetry of two groups were compared by  $\chi^2$  test.

**Table VI: Macular thickness (Mean  $\pm$  SE) of two groups at right and left eye**

Eye	Control(n=30)	POAG(n=30)	t value	p value
Right	265.09 $\pm$ 12.60	235.16 $\pm$ 7.64	11.13	<0.001
Left	266.60 $\pm$ 11.31	235.83 $\pm$ 7.77	12.28	<0.001

Macular thickness of two groups was compared by Student's t test

**Table VII: Macular volume (Mean  $\pm$  SE) of two groups at right and left eye**

Eye	Control(n=30)	POAG(n=30)	t value	p value
Right	7.68 $\pm$ 0.46	7.00 $\pm$ 0.48	5.60	<0.001
Left	7.65 $\pm$ 0.42	7.03 $\pm$ 0.48	5.34	<0.001

Macular volume of two groups was compared by Student's t test.

**Table VIII: Similar studies done showed an IOP&CDR distribution as:**

Study	IOP	CDR
Our study	13.73 $\pm$ 1.74 vs. 18.77 $\pm$ 1.89	0.37 $\pm$ 0.06 vs. 0.71 $\pm$ 0.08
Anjali Sharma et al [11]	14.45 vs 23.33	0.38 vs 0.63
Haitham Y et al [8]	15.5 $\pm$ 6.6 (10–34)	-

**Table IX: Similar studies done showed an age distribution as:**

Study	Total subjects with (POAG)	Mean age distribution
Our study	30	52.53 ± 7.78 yrs
David s et al <sup>[7]</sup>	30	56.7 ± 20.3 yrs
Haitham Y et al <sup>[8]</sup>	42	53.7 ± 3.7 years
Behzad FALLAHI MOTLAGH et al <sup>[9]</sup>	104	59.96 ± 8.75 years

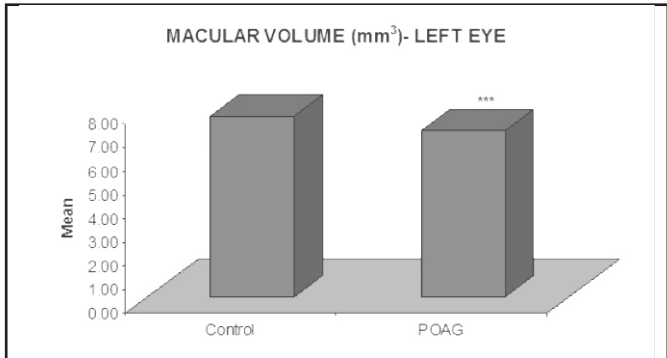
**Table X: Similar studies done showed a Macular thickness distribution as**

Study	Macular thickness
Our study	265.09 ± 12.60 vs. 235.16 ± 7.64
Anjali Sharma et al <sup>[11]</sup>	263.56 vs 243.96 mm
David s et al <sup>[7]</sup>	278+ _24m vs 304+-15m
Behzad FALLAHI MOTLAGH et al <sup>[9]</sup>	276.96 ± 7.80 (262.00 to 298.00)

**Table XI : Similar studies done showed a Macular volume distribution as**

Study	Macular thickness
Our study	7.68 ± 0.46 vs. 7.00 ± 0.48
Anjali Sharma et al <sup>[11]</sup>	6.64 ± 0.17 vs 6.18 ± 0.39

**Fig. XVII. Mean macular volume of two groups at left eye**



quantitative IOP and CDR of two groups at right eye, Student's t test showed significantly different and higher IOP (26.8%) ( $13.73 \pm 1.74$  vs.  $18.77 \pm 1.89$ ,  $t=10.74$ ,  $p<0.001$ ) and CDR (47.9%) ( $0.37 \pm 0.06$  vs.  $0.71 \pm 0.08$ ,  $t=18.01$ ,  $p<0.001$ ) both in POAG patients as compared to control subjects

Further, comparing the distribution of PERIMETRY of two groups at right eye,  $\chi^2$  test showed significantly different distribution of PERIMETRY ( $\chi^2=60.00$ ,  $p<0.001$ ) between the two groups (Table III and Fig. VII).

Similarly, comparing the distributions of categorical BCVA, MEDIA and MACULA of two groups at right eye,  $\chi^2$  test showed significantly different distribution of BCVA ( $\chi^2=30.64$ ,  $p<0.001$ ) between the two groups while distributions of both MEDIA and MACULA were found similar ( $p>0.05$ ) between the two groups i.e. did not differ significantly.

## II. LEFT EYE

The secondary outcome measures (BCVA, SLE, IOP, MEDIA, CDR, MACULA, B/V, B/G and I/G) of two groups at left eye is summarised in Table IV and also shown in Fig IX-XII. Comparing the quantitative IOP and CDR of two groups at left eye, Student's t test showed significantly different and higher IOP (24.4%) ( $14.07 \pm 1.51$  vs.  $18.60 \pm 1.43$ ,  $t=11.96$ ,  $p<0.001$ ) and CDR (47.9%) ( $0.37 \pm 0.06$  vs.  $0.71 \pm 0.09$ ,  $t=17.46$ ,  $p<0.001$ ) both in POAG patients as compared to control subjects.

Similarly, comparing the distributions of categorical BCVA, MEDIA and MACULA of two groups at left eye,  $\chi^2$  test showed significantly different distribution of BCVA ( $\chi^2=33.61$ ,  $p<0.001$ ) between the two groups while distributions of both MEDIA and MACULA were found

similar ( $p>0.05$ ) between the two groups i.e. did not differ significantly.

Further, comparing the distribution of PERIMETRY of two groups at left eye,  $\chi^2$  test showed significantly different distribution of PERIMETRY ( $\chi^2=60.00$ ,  $p<0.001$ ) between the two groups (table V, figure XIII).

## PRIMARY OUTCOME MEASURES

### I. MACULAR THICKNESS

The macular thickness of two groups at both right and left eye is summarised in Table VI and also depicted in Fig. XIV and XV, respectively. Comparing the macular thickness of two groups at right eye, Student's t test showed significantly different and lower (11.3%) macular thickness in POAG patients as compared to control subjects ( $265.09 \pm 12.60$  vs.  $235.16 \pm 7.64$ , mean difference= $29.94$ ,  $t=11.13$ ,  $p<0.001$ ) (Table VI and Fig. XIV).

Similarly, comparing the macular thickness of two groups at left eye, Student's t test showed significantly different and lower (11.5%) macular thickness in POAG patients as compared to control subjects ( $266.60 \pm 11.31$  vs.  $235.83 \pm 7.77$ , mean difference= $30.77$ ,  $t=12.28$ ,  $p<0.001$ ) (Table VI and Fig. XV)

### II. MACULAR VOLUME

The macular volume of two groups at both right and left eye is summarised in Table VII and also shown in Fig. XVI and XVII, respectively. Comparing the macular volume of two groups at right eye, Student's t test showed significantly different and lower (8.8%) macular volume in POAG patients as compared to control subjects ( $7.68 \pm 0.46$  vs.  $7.00 \pm 0.48$ , mean difference= $0.68$ ,  $t=5.60$ ,  $p<0.001$ ) (Table VII and Fig. XVI).

Similarly, comparing the macular volume of two groups at left eye, Student's t test showed significantly different and lower (8.1%) macular volume in POAG patients as compared to control subjects ( $7.65 \pm 0.42$  vs.  $7.03 \pm 0.48$ , mean difference= $0.42$ ,  $t=5.34$ ,  $p<0.001$ ) (Table VII and Fig. XVI)

## DISCUSSION

In our study we compare and correlate macular thickness in primary open angle glaucoma patients and normal subjects using optical coherence tomography.

A total of 60 patients enrolled in the study. Out of which 30 were diagnosed case of primary open angle glaucoma (POAG) and 30 age and sex matched normal subjects without glaucoma were recruited served as control.

In our study it was found the mean age of POAG group was slightly higher than control group. Comparing the mean age of control vs POAG ( $50.93 \pm 9.79$  vs.  $52.53 \pm 7.78$ ,  $t=0.70$ ,  $p=0.486$ )

In various studies it has been noticed that there is a negative relationship between retinal thickness and age, total macular volume and RNFL thickness Eriksson *et al*<sup>[10]</sup>

We compared the quantitative IOP and CDR of two groups at right eye, test showed significantly different and higher IOP (26.8%) ( $13.73 \pm 1.74$  vs.  $18.77 \pm 1.89$ ,  $t=10.74$ ,  $p<0.001$ ) and CDR (47.9%) ( $0.37 \pm 0.06$  vs.  $0.71 \pm 0.08$ ,  $t=18.01$ ,  $p<0.001$ ) both in POAG as compared to control. Similarly, comparing the two groups at right eye,  $\chi^2$  test showed significantly different distribution of BCVA ( $\chi^2=30.64$ ,  $p<0.001$ ) between the two groups while distributions of both MEDIA and MACULA were found similar ( $p>0.05$ ) between the two groups.

Further,  $\chi^2$  test showed significantly different distribution of PERIMETRY ( $\chi^2=60.00$ ,  $p<0.001$ ) between the two groups.

We are comparing the quantitative IOP and CDR of two groups in left eye, test showed significantly different and higher IOP (24.4%) ( $14.07 \pm 1.51$  vs.  $18.60 \pm 1.43$ ,  $t=11.96$ ,  $p<0.001$ ) and CDR (47.9%) ( $0.37 \pm 0.06$  vs.  $0.71 \pm 0.09$ ,  $t=17.46$ ,  $p<0.001$ ) both in POAG as compared to control. Similarly,  $\chi^2$  test showed significantly different distribution of BCVA ( $\chi^2=33.61$ ,  $p<0.001$ ) between the two groups while distributions of both MEDIA and MACULA were found similar ( $p>0.05$ ) between the two groups.

Further,  $\chi^2$  test showed significantly different distribution of PERIMETRY ( $\chi^2=60.00$ ,  $p<0.001$ ) between the two groups.

We compare the macular thickness of two groups in right eye, test showed significantly different and lower (11.3%) macular thickness in POAG as compared to control ( $265.09 \pm 12.60$  vs.  $235.16 \pm 7.64$ , mean difference= $29.94$ ,  $t=11.13$ ,  $p<0.001$ ). Similarly left eye, test showed significantly different and lower (11.5%) macular thickness in POAG as compared to control ( $266.60 \pm 11.31$  vs.  $235.83 \pm 7.77$ , mean difference= $30.77$ ,  $t=12.28$ ,  $p<0.001$ )

Thus it was seen that macular thickness was decreased in glaucomatous patients as compared to normal subjects. These findings are in correlation with studies discussed above and published literature. [12], [13]

We compare the macular volume of two groups in right eye, test showed significantly different and lower (8.8%) macular volume in POAG as compared to control ( $7.68 \pm 0.46$  vs.  $7.00 \pm 0.48$ , mean difference=0.68,  $t=5.60$ ,  $p<0.001$ ). Similarly left eye, test showed significantly different and lower (8.1%) macular volume in POAG as compared to control ( $7.65 \pm 0.42$  vs.  $7.03 \pm 0.48$ , mean difference=0.42,  $t=5.34$ ,  $p<0.001$ )

### CONCLUSION

With the increasing literature regarding the role of macular imaging by optical coherence tomography (OCT) in glaucoma care, Spectral domain OCT (SD-OCT) has allowed for high resolution imaging of the total macula and macular segments. It proves that macular thickness and volume shows a significant correlation with the glaucomatous damage. It may be useful method of documenting early glaucoma and monitoring progression.

Thus, in our study we conclude that macular parameters, such as total macular volume & macular thickness was significantly lower in open angle glaucoma patients when compared with the normal subjects. Thus in addition to RNFL thickness to aid in the diagnosis of early glaucoma using OCT, in certain conditions, such as disc abnormalities or peripapillary atrophy, where RNFL parameters may be distorted macular parameters may be relied upon.

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## **A study to evaluate pain relief and pancreatic function after lateral pancreaticojejunostomy for chronic pancreatitis**

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**Keywords** : Chronic pancreatitis, Lateral pancreaticojejunostomy

### **ABSTRACT**

**Introduction** : Chronic pancreatitis is the persistent inflammation and irreversible fibrosis of pancreatic tissue. It is characterized by chronic abdominal pain and pancreatic insufficiency that decreases the quality of life of the patients.

**Material and Methods** : Eleven patients with severe pain due to chronic pancreatitis were treated by lateral pancreaticojejunostomy after preoperative assessment in SMIMER hospital, Surat. All patients were evaluated on follow up visits for pain relief and endocrine and exocrine insufficiency.

**Results** : Eight patients (73%) are free of pain after operation. Two patients (18%) had decreased pain after surgery. One patient (9%) had no relief of pain and died after surgery. There is no improvement in steatorrhea and diabetes mellitus after surgery.

**Conclusion** : Longitudinal pancreaticojejunostomy has a role for the control of pain in chronic pancreatitis.

### **INTRODUCTION**

Chronic pancreatitis is a progressive inflammatory disease in which there is irreversible destruction of pancreatic tissue. Its clinical course is characterized by severe abdominal pain and in its later stages exocrine and endocrine pancreatic insufficiency. In India the prevalence is 100-200 per 100000. The male : female ratio is 4:11. There are many causes of pain in chronic pancreatitis, but increased pancreatic ductal pressure is one of them<sup>2,3</sup>. Chronic fibrocalcific pancreatitis associated with pancreatic ductal dilation and intractable pain have been historically managed successfully with lateral pancreaticojejunostomy (LPJ)<sup>2,3</sup>. The primary objective of surgical treatment in chronic pancreatitis is to relieve pain<sup>4</sup>. A second objective is to preserve or even improve pancreatic function by restoring the flow of pancreatic secretions to the intestine and by reducing pancreatic inflammation. Eleven patients with intractable pain due to chronic pancreatitis were treated by lateral pancreaticojejunostomy (modified Puestow procedure)<sup>5</sup> after preoperative assessment in SMIMER hospital, Surat. All patients were evaluated on follow up visits for pain relief and endocrine or exocrine insufficiency.

### **MATERIAL AND METHODS**

Eleven patients with recurrent or persistent pain due to chronic pancreatitis admitted to SMIMER hospital were included in the study. These patients had severe pain ranging from 8 to 10 on VAS (visual analog scale). The pain was uncontrolled by analgesics. The average duration of pain was 11 months, with a range of 5 months to 2 years. All patients had a dilated pancreatic duct on magnetic resonance cholangiopancreatography with a minimum diameter of 9 mm and changes of chronic pancreatitis. Preoperative assessment included history of diabetes mellitus, habit of alcohol consumption and tobacco chewing. Blood investigations included serum amylase, s. lipase, s. calcium, total leucocyte count, s. bilirubin, and s. alkaline phosphatase levels. Radiological investigation included ultrasonography of the abdomen, contrast enhanced computed tomography abdomen and magnetic resonance cholangiopancreatography. Evaluation of pancreatic function was done by doing fasting blood sugar level, post prandial blood sugar level and stool fat assessment. The operation performed in 10 patients was an open lateral pancreaticojejunostomy utilizing a Roux-en-Y loop of jejunum. One patient was

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Patient	age/ gender	Alc ohol	Sm oki ng	Pain (VAS)		Steatorrhea		Diabetes mellitus		Follo w up (in mont hs)	D e a t h
				Pre op	Post op	Pre op	Post op	Pre op	Post op		
1	30/m	+	+	8	0	-	-	-	-	36	-
2	46/m	+	-	9	0	+	+	-	-	10	-
3	12/f	-	-	9	0	-	-	-	-	40	-
4	39/m	+	-	10	2	-	+	+	+	11	-
5	29/m	+	+	9	0	-	-	-	+	12	-
6	35/m	+	+	8	0	-	-	-	-	9	-
7	52/f	-	-	9	2	+	+	+	+	6	-
8	38/m	+	-	8	0	-	-	-	-	8	-
9	43/m	+	+	10	0	-	-	-	-	17	-
10	44/m	+	-	9	9	-	-	-	-	6	+
11	37/m	-	-	8	0	-	-	-	-	15	-

operated laparoscopically. The anastomosis was fashioned by using single layer of PDS (polydioxanone), which united the mucosa of the jejunum and pancreatic duct. One patient was operated for laparoscopic lateral pancreaticojejunostomy. All patients were systematically evaluated for at least 6 months after the operation to ascertain the pain relief and status of pancreatic function.

## RESULTS

### Patient Demographics

The mean age of the patients (9 men, 2 women) was 36 years (range: 12 years to 52 years). The causes of chronic pancreatitis were alcohol abuse in 8 (73%), gall stones in 2 (18%) and idiopathic in 1 (9%). One patient died after 4 months of operation.

### Preoperative Evaluation

Two patients were diabetic and were on insulin. One patient required oral pancreatic enzyme supplements for control of malabsorption while another had abnormal levels of stool fats. Changes of chronic pancreatitis (calcifications and atrophy) were present in all patients on radiological investigation. Two patients had gall stone pancreatitis. MRCP showed a dilated main pancreatic duct with average diameter of 10 mm (range: 9 mm to 12

mm) in all patients. Intraductal pancreatic calculi were found in 7 cases.

### Pain Relief

Complete relief of pain was achieved in 7 patients. Two patients had pain and required intermittent small amounts of analgesic medication. These patients had VAS score of 2 and refused for further investigation for incomplete relief of pain. One patient had one attack of pain after 3 months of operation which was graded 5 on VAS. This patient had no complaint of pain on follow up visits. One patient continued to drink alcohol and thus had no relief of pain after surgery. He died after 4 months of surgery.

### Pancreatic Function

One patient had complain of steatorrhea after 6 months of operation. Two patients had no relief of steatorrhea after surgery. These patients required oral pancreatic enzyme supplements to control steatorrhea. One patient had hyperglycemia after 6 months of operation. Two patients had hyperglycemia and steatorrhea both.

## DISCUSSION

The dilated pancreatic duct is the result of obstruction at some point in the pancreatic duct outflow, either by stone or by stricture, and the anastomosis of the duct to the

jejunum provides an alternate vent for decompression. Thus lateral pancreaticojejunostomy provides relief from pain<sup>3,6,7</sup>. Outcome after procedures that provide ductal drainage for chronic pancreatitis is influenced by several variables<sup>8</sup>. Chronic pancreatitis is almost exclusively a result of chronic alcohol abuse<sup>9</sup>. This population might have other substance abuse problems including tobacco, that also may affect their health status and have effect on development of chronic pancreatitis<sup>3</sup>. Patients were selected for LPJ on the basis of unrelenting pain and evidence of a dilated pancreatic duct. However, associated other conditions were present in a few of the patients. One patient had gall bladder and common bile duct calculi. He was managed by therapeutic ERCP and stenting of CBD followed by Laparoscopic cholecystectomy followed later by open lateral pancreaticojejunostomy. We did modified Puestow procedure for LPJ in all cases<sup>5</sup>. In all cases, the duct incision was carried on the full length of the dilated duct. MPD stones were found only in 4 cases (radiologically they were present in 7 patients). The average duration of surgery was 4 hours. Morbidity was within an acceptable range after surgery<sup>7</sup>. There were no deaths in the first 30 days after surgery. Mortality rates in the range of 0% to 5% have been reported in several recent studies<sup>10,11,12</sup>. One patient had jejunojejunal anastomosis leak on 6th postoperative day. It was refashioned. One patient was operated laparoscopically. In common with other studies, persistent pain was found in two patients with decreased severity<sup>10-14</sup>. These patients had first episode of pain within one month after surgery. Eight patients (73%) were free of pain after operation. One patient continued to drink alcohol and thus had no relief of pain after surgery. He died after 4 months of surgery

### CONCLUSION

Longitudinal pancreaticojejunostomy has a role for the control of pain in chronic pancreatitis.

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### Feto-maternal outcome in Gestational Diabetes Mellitus

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**Key Words :** Gestational Diabetes, hyperglycemia, glucose intolerance

#### ABSTRACT

**Background :** Gestational diabetes mellitus (GDM) is a growing global public health problem that can have short- and long-term health consequences for the mother and the child. Much controversy surrounds the diagnosis and management of gestational diabetes, emphasizing the importance, relevance and consequences. If newly proposed criteria are adopted universally a significantly growing number of women will be diagnosed as having GDM, implying new therapeutic challenges to avoid fetal and maternal complications related to the hyperglycemia of gestational diabetes. Due to the lack of knowledge on GDM and the fact that diabetes and obesity are high in India, this study includes the challenges of screening and diagnosis, the treatment and prevention of GDM and the long and short term consequences of gestational diabetes for both mother and offspring.

**Methodology :** A study was done between August 2017 to August 2018. A total of 55 patients were included in the study.

**Results :** The incidence of gestational diabetes mellitus is about 17.8%. Majority of the patients were primi para between 25-29 years age group. 25.45% patients had family history of diabetes. Majority of the patients showed good response to insulin. 52.72% patients had vaginal delivery and 47.27% patients had LSCS.

**Conclusion :** Gestational Diabetes Mellitus can be treated and have a better outcome by Pre-pregnancy counseling, good glycaemic control, regular antenatal care, proper monitoring of blood glucose level and timely management which can reduce maternal and fetal morbidity and mortality.

#### INTRODUCTION

**Introduction :** Gestational Diabetes Mellitus (GDM) is defined as<sup>1,2</sup> Any degree of glucose Intolerance with onset or first recognition during pregnancy. Diabetes has become a global pandemic because of<sup>3</sup> sedentary life style, urbanization and increasing incidence of obesity. As the incidence of diabetes is rising in epidemic proportion, more women of childbearing age are at increased risk of diabetes during pregnancy.

In this respect, detection of GDM becomes an important health issue<sup>4</sup>. Understanding the various outcomes of gestational diabetes would be the key to initiate the cascade of preparatory steps to tackle them.

In overt Diabetes, pre-pregnancy counselling and care plays key role which includes Advice and practical measures to achieve glycaemic control before conception.

This study was planned to find clinical profile and feto-

maternal Outcome in patients of pregnancy with diabetes (both GDM and overt diabetes) At tertiary care medical college hospital from the period of August 2017 to August 2018. The patients were screened during their regular antenatal visits and then were admitted for further evaluation.

#### AIMS OF STUDY

To study proportion of diabetes in pregnancy, both gestational and diabetes, along with maternal characteristics like age, parity and family history. To study, effects of diabetes on pregnancy and effect of pregnancy on diabetes. To study feto-maternal outcome and complication in pregnancy with diabetes. To plan management of pregnancy with diabetes and to decrease fetomaternal morbidity and mortality.

#### METHODS

**Study Type:** There was a study conducted on 55 Diabetic Patients at our tertiary care centre at Ahmedabad and the fetomaternal outcome was analyzed.

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### Risk Factors: Categorizing groups at risk for gestational diabetes mellitus 5

Risk category	Clinical characteristics
High risk	• Marked obesity
	• Strong family history of type 2 diabetes
	• presence of glycosuria
	• Previous history of GDM or glucose intolerance
Average risk	• Previous poor obstetric outcome (e.g. an infant with macrosomia)
	• Neither high nor low risk
Low risk	• Age <25 years
	• No history of poor obstetric outcomes
	• Belongs to low risk ethnic groups
	• No diabetes in first degree relative
	• No history of abnormal glucose tolerance
	• Normal pre-pregnancy weight and pregnancy weight gain

### GDM diagnostic threshold values from various organization

Organization	OGTT , Glucose load	Plasma glucose concentration thresholds(mg/dl)			
		Fasting	1-hours	2-hours	3-hours
ADA	100g	95	180	155	140
ACOG	100g	105	190	165	145
WHO	75g	126	-	140	-
IADPSG	75g	92	180	153	-
DIPSI	Non fasting OGTT with 75g		-	140	-

Diagnosis of GDM if two or more glucose values equal to or exceeding the threshold values.

**Duration :** From August 2017 to August 2018

**Inclusion Criteria :** Patients who had pregnancy with diabetes (gestational and overt) were included in this study. All cases, registered or emergency, were included in study.

**Diagnosis :** WHO Procedure<sup>6</sup>: To standardize the diagnosis of GDM, the WHO recommends using 2 hours 75gm OGTT with a threshold plasma glucose concentration of greater than 140 mg/dl at 2 hours. WHO procedure also has a shortcoming in that, the criteria suggested for diagnosis of GDM was also not based on the maternal and fetal outcome but probably the criteria was recommended for its easy adaptability in clinical practice. The same procedure was used at our centre.

**Management :** Pre-conceptual Care<sup>7</sup>: The ADA has defined optimal pre-conceptual glucose control using insulin to include self monitors pre-prandial glucose levels of 70 to 100 mg/dL and postprandial values <140 mg/dL and <120 dL at 1and 2 hours, respectively. Folate 400 microgram/day is given preconceptionally and during early pregnancy to decrease the risk of neural tube defects. Weight reduction is advised if obese. Symptoms of hypoglycaemia are informed and need for immediate treatment is explained.

**During Antenatal Period :** Overtly diabetic women during early pregnancy are hospitalized to institute an individualized glucose control program and to provide education concerning the months of pregnancy.

**Results :** Result are shown in tables below :

**1. Maternal outcome:**

**Table 1: Age of patients**

Age	No (n=55)	Percentage
20-24	15	27.27
25-29	23	41.81
30-34	9	16.36
35.39	8	14.54

Pregnancy with diabetes is more common in younger age group

**Table 2: Family History of diabetes**

Family History	No (n=55)	Percentage
Present	14	25.45
Absent	41	74.54

Pregnancy with diabetes has a strong association with family history.

**Table 3: Gravidity**

Gravida	No(n=55)	Percentage
Primi	23	41.81
Second	7	12.72
Three or more	25	45.45

Majority of the patients were primi para.

**Table 4 : Blood glucose levels on admission in L.R**

RBS Level on admission in LR		
RBS ( Mg/dL)	No(n=55)	Percentage
<100	21	38.18
100-140	13	23.63
141-180	13	23.63
181-200	5	9.09
>200	3	5.45

Majority of the patients were primi para.

**Table 5: Ultrasonographic findings on admission**

Parameter		No(n=55)	%
Maturity	<28 weeks	1	1.81
	28-34 wks	12	21.81
	34-37 wks	20	36.36
	>37 wks	22	40
Liquor	Oligo	11	20
	Adequate	33	60
	Poly	11	20
Cardiac activity	Present	44	80
	Absent	11	20

**Table 6: Treatment on admission**

	No(n=55)	%
Oral hypoglycaemic agents	11	20
Insulin	44	80

**2. Pregnancy Outcome:**

**Table 7: Mode of deliveries**

	Diabetic No	(n=55) %
<b>Vaginal</b>	<b>29</b>	<b>52.72</b>
Induced	14	25.45
Spontaneous	15	27.27
<b>LSCS</b>	<b>26</b>	<b>47.27</b>

**3. Complications:**

**Table 8 : Maternal Complications**

Complications	No	%
PIH	10	18.18
Vulvo-vaginitis	8	14.54
Diabetic Retinopathy	3	5.45
Septicaemia	4	7.27
Wound gap	2	3.63
HELLP syndrome	2	3.63
Diabetic Ketoacidosis	1	1.81
/Mortality		

**Table 9: Neonatal Outcome**

Neonatal outcome	No (n=55)	%
<b>Live birth</b>	<b>44</b>	<b>80</b>
Weight <2.5 Kg	15	27.27
Weight >2.5 Kg	29	52.72
NICU admission	6	10.90
Still birth	1	1.81
Neonatal mortality	4	7.27
<b>IUFD</b>	<b>11</b>	<b>20</b>

**Diet and Nutrition :** ADA recommends a caloric intake of 30-35 kcal/kg, taken as three meals and three snacks daily. An ideal dietary composition is 55% carbohydrate, 20% protein, and 25% fat with less than 10% as saturated fat diet rich in fiber and low in glycaemic index has been advocated.

**Exercise :** Physical activity during pregnancy reduces risk of GDM. Light exercise in the form of brisk walking especially after a meal reduces postprandial glucose levels.

**Medical Management :** Insulin treatment<sup>8</sup>: Insulin therapy is usually recommended when standard dietary management does not consistently maintain fasting plasma glucose at <95 mg/dL or 2-hour postprandial plasma glucose <120mg/dL as per ACOG. Maternal glycaemic control can usually be achieved with multiple daily insulin injections and adjustment of dietary intake.

**Insulin Management during Labour and Delivery :**

- Usual dose of intermediate acting insulin is given at bedtime.
- Morning dose of insulin is withheld.
- Intravenous infusion of normal saline is begun.
- Once active labour begins or glucose levels decrease to <70mg/dl, the infusion is changed from saline to 5-percent dextrose and delivered at a rate of 100-150ml/hr to achieve a glucose level of approximately 100mg/dl.
- Glucose levels are checked hourly using a bedside meter allowing for adjustment in the insulin or glucose infusion rate.
- Regular (short-acting) insulin is administered by intravenous infusion at a rate of 1.25U/hr if glucose levels exceed 100mg/dl.

**Table 10: Neonatal Complications**

Complications	No (n=55)	%
Prematurity	15	27.27
Hypoglycaemia	6	10.90
Respiratory distress syndrome	4	7.27
Congenital malformation	2	3.63
Neonatal Mortality	5	9.09

**Oral Hypoglycaemic Agents :** The ACOG acknowledges that both Glyburide and Metformin are appropriate as is insulin for first line glycaemic control in women with gestational diabetes.

**Obstetrical Management :**

- Frequent antenatal checkups: Every monthly up to 20 weeks, then every 2 weekly upto 32 weeks and then weekly till delivery.
- Routine first (11-13weeks) and second trimester anomaly scan (18-20 weeks) and USG every 4 weeks after 32 weeks.
- Daily Fetal Movement count from 32 weeks onwards. NST once weekly from 32 weeks onwards & twice weekly after 36 weeks.
- Induction after 38 weeks if spontaneous labour does not start
- CS for obstetric indications or macrosomia

**Postpartum Advice :** Glucose tolerance test with 75g oral glucose is performed after 6 weeks of delivery and if necessary repeated after 6 months and every year to determine whether the glucose tolerance has returned to normal or progressed.

**Contraception :** Because of risk of vascular disease, hormonal contraceptives are not recommended. Intrauterine device (IUCD) is the method of choice for contraception. Barrier contraception or if the family is complete methods of sterilization is also advised.

**Discussion :** Recent studies have strongly indicated that untreated carbohydrate intolerance during pregnancy is associated with higher rates of maternal morbidity and mortality. The purpose of screening , treatment and management of GDM is to prevent stillbirth, congenital

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anomalies, NICU admissions, recurrent abortion, pre-eclampsia, intra-uterine deaths and decrease incidence of macrosomic babies, thereby reducing maternal and perinatal morbidity and mortality. The findings of the present study confirmed that GDM patients are liable to have adverse pregnancy outcomes.

Pregnancy with diabetes was more common in younger age group, has a strong association with family history (25.45%). Majority of these patients were primi para (41.81%)

On admission, majority of the patients had a random blood sugar level between 141-180. Ultrasound on admission showed polyhydramnios(20%) and 20% fetuses on ultrasound showed intra uterine death. 80% of patients were given insulin and had controlled blood sugar level with the same.

Mode of delivery was often dictated by the increased size of the baby, poor past obstetric history, fetal distress and glycaemic control of patient. Gestational diabetes was associated with an increased incidence of cesarean delivery (47.27%) The main indications for CS being cephalopelvic disproportion, fetal distress, malpresentation and macrosomic babies.

Increased incidence of complications were found to be associated with GDM. 10 patients developed associated pre-eclampsia, 8 patients developed vulvovaginitis, 3 patients developed diabetic retinopathy, 4 patients developed septicemia, and 1 patient developed diabetic ketoacidosis. Thus, gestational diabetes is associated with high maternal morbidity and mortality.

27.27% of neonates were low birth weight, 10.90% of neonates were admitted in neonatal intensive care unit. Therefore, neonates of diabetic mothers are at an increased risk of prematurity and respiratory distress syndrome.

The above results suggest that good glycemic control is essential in gestational diabetes to improve maternal and neonatal outcome.

Conclusion: GDM is one of the most common medical and metabolic complication seen in pregnancy. Women who are at high risk of developing GDM should be appropriately screened to reduce maternal and fetal morbidity.

The management of GDM should be based on a team approach involving diabetologist, obstetrician, dietician

and paediatrician to reduce the incidence of associated complications. universal screening, Pre-conceptional care, antepartum and intrapartum management and contraceptive counselling are of equal importance to improve fetomaternal outcome.

Patients with GDM are at risk of developing type 2 diabetes in the future and should be monitored regularly. Similarly the offspring of diabetic pregnancies are at risk of developing obesity, IGT and diabetes and should also be followed up.

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## Original Articles

### Study of Minor and Major adverse drug reaction of intravenous Iron Sucrose in the treatment of severe iron deficiency anemia.

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**KEY WORDS** : Iron deficiency anaemia, intravenous iron sucrose, Antenatal and Postnatal patient.

#### ABSTRACT

Anaemia is a major health problem worldwide. Intravenous iron sucrose appears to be treatment of choice with no serious side effects, indicated in the rapid correction of anaemia in pregnancy or restoring maternal iron stores.

**AIMS:** To evaluate the effects of injectable iron sucrose therapy in terms of minor and major adverse drug reactions in antenatal and postnatal patients. **MATERIALS AND METHODOLOGY:** The present study was conducted on antenatal and postnatal patients within the age group of 19-40 years clinically diagnosed as anaemic. Routine haematological investigations including peripheral blood smear examination, complete blood count and injectable iron sucrose therapy was given and minor and major adverse reaction was studied. **RESULT:** 10 % of antenatal patient and 16% of postnatal patients developed adverse reactions to intravenous iron sucrose. Out of 12 minor side effects 4 were developed in antenatal patients and 8 in postnatal patients. Only 1 major reaction developed in antenatal and no major reaction developed in postnatal patient.

**CONCLUSION:** Intravenous iron sucrose transfusion is an effective treatment strategy for antenatal and postnatal patients with negligible side effect and leads to rapid rise in Hb level.

#### INTRODUCTION

In India, prevalence of anaemia has been reported to be in the range of 33-89% and characteristically 50% in the women of reproductive age group. Anaemia in pregnancy is not only associated with adverse maternal outcomes like puerperal sepsis, Antepartum Haemorrhage, Postpartum Haemorrhage, increased risk of maternal morbidity and mortality but also adverse fetal outcome like premature birth, low birth weight babies and high perinatal mortality. In India anaemia is very prevalent because most of the women are from low socioeconomic class, illiterate, having false dietary habits, blood loss due to heavy menstrual cycle, younger age of marriage, early pregnancy, less spacing between pregnancies, social negligence, health problems neglected by females. Intravenous iron sucrose appears to be a treatment of choice with no serious side effect, indicated in the rapid correction of anaemia in pregnancy or restoring maternal iron stores, specially because the total stores can be administered over a short period.

#### AIMS AND OBJECTIVES

- 1) To evaluate the effects of injectable iron sucrose therapy in terms of minor and major adverse drug reaction in antenatal and postnatal patients.
- 2) To evaluate the efficacy of injectable iron sucrose in terms of rise in Hb.

#### MATERIALS AND METHODS

This is a prospective study conducted in the maternity wards of Shalin Hospital for 1 year. A total of 100 Antepartum singleton pregnancy and postpartum patients with haemoglobin levels less than 7gm% and MCV <100fl and a ferritin level <50microgm/L were included. Patients with medical disorders, multiple pregnancy, women with other comorbidities like DVT, Thrombocytopenia, Renal or Hepatic disorder, COPD, Asthma, Cardiovascular disorder, Hb level > 7 gm%, and with anemia other than iron deficiency anemia were excluded.

DEFICIT OF IRON WAS CALCULATED BY THE FOLLOWING FORMULA:

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TOTAL IRON DOSE (mg) = WEIGHT (kg) \*(TARGET HB-PRESENT HB IN gm/dl) \*2.4 +500 mg FOR REPLENISHMENT OF IRON STORES.

Calculated dose of iron sucrose is given in divided doses thrice weekly or on alternate day. 200 mg is mixed in 100 ml normal saline solution and given intravenously, the first 10 ml infused over a period of 15 min, if there are no adverse reactions, the remaining portion of the infusion is given over 60 min. ADR monitoring done. Hb levels were repeated after 3 weeks of administration of injectable iron sucrose.

### OBSERVATIONS AND ANALYSIS

**Table 1: Distribution Of Antenatal Patients According To Weeks Of Gestation**

Antenatal patients with Gestational age	No. of patients	Percentage
13-20 weeks	12	24%
20-28 weeks	15	30%
28-36 weeks	23	46%
TOTAL	50	100%

**Table 2: Distribution Of Postnatal Patients**

POSTNATAL PATIENTS	No. of patients	Percentage
CS	20	40%
NORMAL DELIVERIES	30	60%
TOTAL	50	100%

**Table 3: Iron Sucrose Requirement**

DOSE REQUIRED	NO. OF PATIENTS
800-999	32
1000-1199	56
1200-1400	12

**Table 4: Reactions In Antenatal And Postnatal Patients**

REACTIONS	ANTENATAL PATIENTS	POSTNATAL PATIENTS
MINOR REACTION	4(33.33%)	8(66.66%)
MAJOR REACTION	1(100%)	0(0%)

**Table 5: Type Of Minor Reactionsn**

TYPE OF REACTION	NO. OF ANTENATAL PATIENT	NO. OF POSTNATAL PATIENTS	TOTAL
INJECTION SITE PAIN	1	2	3
PHLEBITIS	0	1	1
HEADACHE	1	1	2
FEVER WITH CHILL	1	2	3
PRURITIS	1	1	2
ARTHRALGIA	0	1	1
TOTAL	4	8	12

**Table 6: Major Reactions**

TYPE OF REACTION	NO. OF ANTENATAL PATIENT	NO. OF POSTNATAL PATIENTS	TOTAL
ANAPHYLACTIC	1	0	1
TOTAL	1	1	1

Table 7 : Rise In Hb Levels

HEMOGLOBIN IN gm%	NO OF PATIENT
1-1.9	13
2-2.9	52
3-4	31
>4	3

### RESULT

- 1) A total of 13 patients developed adverse reactions to iron sucrose. Among them 5 (38.46%) antenatal and 8(61.53%) were postnatal patients.
- 2) 12 patients developed minor reaction and 1 patient developed major reaction. Out of these 12 patients, 4 patients developed intravenous route related side effect (3 of them developed pain at injection site and 1 patient developed phlebitis) and 8 patients developed generalized type of side effect
- 3) Only 1 patient developed major reaction.
- 4) Increase in haemoglobin was significantly high, around 2-3 gm% increase.

### CONCLUSION

- 1) Anaemia is a serious health problem in India where the pregnant women and her child are in danger.
- 2) Intravenous iron sucrose transfusion is an effective treatment strategy for pregnant patients with severe anaemia during late pregnancy.
- 3) Intravenous iron sucrose is associated with negligible side effects and is safe in antenatal and postnatal period.
- 4) Intravenous iron sucrose causes rapid rise in Hb level and replacement of stores was faster.

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## Original Articles

### Evaluation of different techniques for management of postpartum hemorrhage.

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**KEY WORDS** : ·Post Partum Hemorrhage,Oxytocin,Uterine artery ligation

#### ABSTRACT:

**BACKGROUND** : Postpartum hemorrhage accounts for a quarter of maternal deaths worldwide. Although maternal mortality has decreased in the developed world over the years due to institutional deliveries, improved surgical techniques and availability of blood and blood components, PPH still remains a leading cause of maternal mortality.

**MATERIAL AND METHOD:** This study includes patients who developed PPH following their delivery at tertiary care center (Sheth L. G. Hospital ) from 1stAugust 2016 to 31st July2018 in Obstetrics and Gynecology department. During this period there were total 14798 deliveries and 55patients developed PPH.

**RESULTS** : In present study, 67.28% patients were unregistered and 32.72% were registered patients. In present study, 92.72% Patients were delivered at hospital and 7.28% were delivered at home. In present study, 61.82% patients with cesarean sections and 38.18% with vaginal delivery were having PPH. 85.46% patients developed atonic PPH,14.55% traumatic, 5.45% associated with coagulopathy..In 49.09% of patients operative intervention required in form of uterine artery ligation (27.27%), Ovarian Artery Ligation (3.64%), uterine compression sutures(3.64%), tear suturing(9.09%), obstetric hysterectomy(10.91%). Maternal mortality was 3.64%.

**CONCLUSION:** PPH is preventable condition. By identifying risk factor and anticipating PPH we can prevent and manage PPH. Thus intelligent and anticipatory early interventions with proper planning are required to reduce the mortality and morbidity in PPH. Active management of labour, especially the third stage with routine prophylactic administration of uterotonic drugs to reduce the risk of PPH have become an integral part of the management of labour and delivery.

#### BACKGROUND

Postpartum hemorrhage accounts for a quarter of maternal deaths worldwide<sup>1</sup>. According to the recent Confidential Enquiries into Maternal and Child health (CEMACH) report obstetric hemorrhage occurs around 3.7 per 1000 birth with uterine atony being the commonest cause. An Indian hospital study found the MMR to be 4.2 per 1000 live births. Postpartum hemorrhage is defined as blood loss of more than 500ml following vaginal delivery and more than 1000ml following caesarean section, within first 24 hours of childbirth. Although in this triennium, there has been a significant reduction in number of maternal deaths due to obstetric hemorrhage.

Worldwide, PPH continues to contribute to significant maternal morbidity and mortality. Review of recent Indian literature reveals that hemorrhage accounts for

over 25% of maternal deaths of which 30% deaths are caused by PPH. Patients who survive may run the risk of immediate and late complication that may cause physical and psychological disabilities. Rapid diagnosis of PPH is essential for its successful management. Although maternal mortality has decreased in the developed world over the years due to institutional deliveries, improved monitoring, investigative enhancements, improved surgical techniques and availability of blood and blood components, PPH still remains a leading cause of maternal mortality in developing countries. The rate of PPH with a morbidly adherent placenta is markedly increasing, due to increasing rates of cesarean sections. Organization and association including WHO, ACOG and RCOG have released a guidelines for PPH prevention and management. A systemic approach using algorithms

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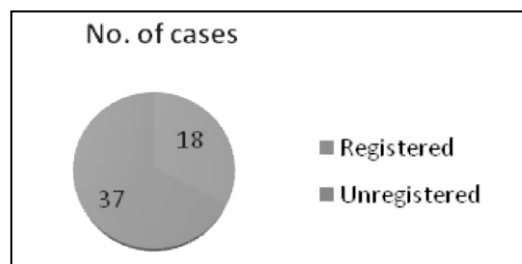
such as HAEMOSTASIS to ensure timely and appropriate action may reduce morbidity and mortality. Hence main objective of the present study is to study different management protocols of PPH which decrease maternal mortality and morbidity.

### METHODS

This is a prospective study of cases of postpartum hemorrhage delivered at/referred to L.G hospital during 1st august 2016 – 31st July 2018. Out of 14798 delivery during this period 55 patients suffered from PPH. Detailed history were noted to identify risk factor which can contribute to PPH. The data collected was analyzed systemically, tabulations were made and observations compared with series present by various foreign and Indian authors.

### RESULTS

As this study was carried out in our general hospital 78.18% patients belonged to rural areas and most of which are admitted as an emergency case. Present study shows that occurrence of PPH is maximum in emergency cases as compared to registered cases. Registered patients have the benefit of several antenatal checkups, anemia being treated, screening of high risk patients done and complications during pregnancy have been diagnosed and managed accordingly. Further on their mode of delivery can also be planned which is not done in emergency patients.



Present study shows that 92.72% of patients had hospital delivery out of which 3.64% were referred from other hospital and 7.28% are delivered at home. Patients delivered at home or referred from other hospitals are referred from distance more than 5-7km. At the time of admission there was significant blood loss

In present study, uterine atony is the most common cause for PPH accounting for about 85.46% which is 70.5% in Bibi samshad study<sup>8</sup>, traumatic PPH in 14.55% patients which is 20% in I. Macrovi<sup>9</sup> study. 5.45% patients had PPH due to altered coagulation profile as a complication of jaundice and abruptio.

In present study, surgical interference was required in 49.09% cases in form of uterine artery ligation, cervical and vaginal tear repair, hysterectomy, compression sutures, repair of lower segment rupture etc. SJ Kore<sup>6</sup> study on stepwise devascularization on 23 patients achieved success in 95.7% cases. O'Leary in review of 265 women who underwent uterine artery ligation, reported success rate of greater than 95%.

**Table 1 : Mode of Delivery**

	Mode of delivery	No of cases	Percentage
<b>Cesarean delivery</b>	Lscs	34	61.82%
<b>Vaginal delivery</b>	Vaginal delivery	16	32.73%
	Assisted breech delivery	2	3.64%
	Forceps delivery	1	1.81%
<b>Total</b>		55	100%

**Table 2 : Types of Pph**

Type of PPH	Present study	Bibi shamshad et al <sup>2</sup>	I. Marcovivi (2005) <sup>3</sup>
Atonic	85.46%	70.5%	70%
Traumatic	14.55%	29.4%	20%
Coagulopathy	5.45%	-	-

**Table 3 –Mode of Management and PPH**

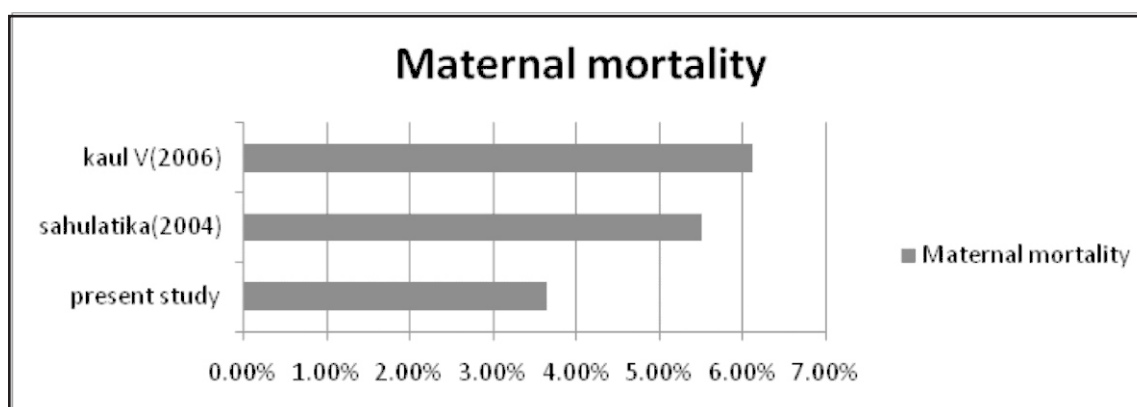
	<b>Methods</b>	<b>Present study</b>	<b>Bibi shamshad et al<sup>2</sup></b>
Medical management	Medical treatment	50.91%	22%
Surgical management	Uterine artery ligation	27.27%	2.2%
	Cervical and vaginal tear repair	9.09%	15.5%
	Repair of ruptured uterus	3.64%	-
	Total hysterectomy	10.91%	-
	Uterine packing	7.27%	-
	Compression sutures	3.64%	2.2%
	Ovarian artery ligation , Hypogastric artery ligation	3.64%	0.7%
	Manual removal of placenta	-	8%
	Removal of retained placental tissue	-	8.9%

**Table 4 – Medicalmanagement of PPH**

	<b>No of patients</b>	<b>percentage</b>
O	5	9.09%
O + M	15	27.27%
O + E + M	6	10.91%
O + E + M + C	2	3.64%

O – Oxytocin E-ergometrine M – Misoprostol C- Carboprost

**Table 5 – Maternal Mortality In PPH**



Medical means of management were used in all patients to no avail. In present study, about 50.91% of patients responded to medical treatment alone. 9.09% responds to only oxytocin and 27.27% responds after adding tablet misoprostol to oxytocin. 3.64% patients required all for agents to stop the bleeding.

Walter Prendiville et al (1988)<sup>4</sup> stated that routine administration of oxytocin does have an effect on the rate of PPH, reducing it about 40% Merrikay A. et al (1990)<sup>5</sup> study states that hemorrhage was successfully controlled immediately after the administration of hemabate sterile solution (15methyl PGF<sub>2</sub>alpha) in 87.8% cases (208/237)

Out of 55, two patients were expired In present study mortality rate is 3.64% which is comparable to sahatika<sup>7</sup> 5.5% and kaul V<sup>8</sup> 6.1%. one patient died because of complications of PPH like DIC and septicemia & second patient died because of hypovolemic shock and cardiopulmonary arrest. Low incidence is due to better antenatal care, good tertiary care facilities and skilled staff.

### CONCLUSION

Despite the keen interest of international health agencies, worldwide maternal mortality has not declined substantially due to high rates of PPH . This can be attributed to non-availability of health care resources in rural settings, lack of means of rapid transport system and local cultural practices. Once PPH is diagnosed coordinated functioning of multidisciplinary practitioners such as – midwife, obstetrician, anesthesiologist, hematologist, and laboratory team including blood bank services is required. PPH is preventable condition. By identifying risk factor and anticipating PPH we can prevent and manage PPH. Active management of labour, especially the third stage with routine prophylactic administration of uterotonic drugs to reduce the risk of PPH have become an integral part of the management of labour and delivery. Since the last decade conservative surgical procedures have been successfully used in various forms. Conservative surgical approaches not only control PPH, but also preserve a woman's reproductive functions and avoids hysterectomy and its related complications and consequences.

Thus following are the measures to be taken to reduce the mortality and morbidity in PPH :

Regular and adequate antenatal check up, Aseptic vaginal examination, Avoidance of prolonged labour ,Follow the protocol of AMTLS to prevent PPH,

Accurate diagnosis of cause of bleeding , Adequate and prompt restoration of circulatory volume, Any form of operative procedure should be performed timely before patient is in extremis and guided by an experienced person ,Measures should be taken for subsequent recovery.

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**Iatrogenic Bile Duct Injury What And When?****Dr. Nupoor Raval\***, **Dr. Maulik Mehta\*\***, **Dr. Pankaj Modi\*\*\***, **Dr. Prujal Parekh\*\*\***, **Dr. Pruthvi Patel\*\*\***

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**Keywords :** laparoscopic cholecystectomy, bile duct injury**ABSTRACT**

A prospective study of patients with iatrogenic bile duct injury (IBDI) on what to do and when to do; over a period of one year at a tertiary health care center.

**AIMS AND OBJECTIVES :**

1. A compilation of various presenting scenarios of patient with IBDI.
2. Modalities of investigation.
3. When and how to intervene.

**MATERIALS AND METHODS :**

Over a period of one year, 20 patients with iatrogenic bile duct injury were divided into two categories – one, those who were diagnosed intraoperative and second, who were diagnosed after 24 to 48 hours. Patients in second category were further subdivided into those who underwent immediate intervention and those who were kept conservative for 8-12 weeks and operated on after that.

These patients were assessed on various clinical, biochemical and radiological parameters like vitals, per abdomen examination, hemogram, liver function tests, ultrasound, MRCP, ERCP and CECT.

**RESULTS :**

Out of 20 patients, only 2 patients were diagnosed to have IBDI intraoperative, t-tube placement done in one and in another the proximal end was tied.

Out of the other 18 – 2 presented with biliary peritonitis and had to be re-explored.

The other 16 were stable and could be kept conservative till 3 months following which a delayed attempt at bilio-enteric reconstruction was given with a uneventful post operative course.

**CONCLUSION**

Intraoperative diagnosis is difficult in cases of IBDI but after 24-48 hours – prompt intervention in patients with developing biliary peritonitis and delayed intervention in stable patients with close follow up of their clinical course is crucial in preventing IBDI related mortality and morbidity.

**INTRODUCTION**

Iatrogenic bile duct injury is a rising problem due to increasing trend in laparoscopic cholecystectomy.

The most frequent cause of IBDI is misidentification of the bile duct as the cystic duct; in cases of anomalies of cystic duct insertion into common hepatic duct. Such misidentification of biliary anatomy before clipping, ligating and dividing structures predisposes to IBDI.

**FACTORS INCREASING RISK OF IBDI**

- Anatomical anomalies in bile duct and hepatic arteries and its misidentification.
- Inflammation around gall bladder and hepaticoduodenal ligament.
- Bleeding from surgical area
- Obese patient
- Excessive dissection along the common bile duct margins causing damage to three and nine o'clock pericholedochal arterial plexus.

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According to literature, distal IBDI are accompanied by damage of axial arteries (10-15%) and proximal IBDI are usually associated with damage to hepatic artery and its branches (40-60%).

### AIMS

- A compilation of various presenting scenarios of patient with IBDI.
- Modalities of investigation.
- When and how to intervene

### MATERIALS AND METHODS

- STUDY DESIGN – prospective study
- STUDY GROUP – Over a period of one year, 20 patients admitted in civil hospital; operated for cholecystectomy within or from outside were included in the study.
- There were 12 females and 8 males.
- Inclusion criteria – Patients operated for cholecystectomy with postoperative bile leak into drain or peritoneum.
- Exclusion criteria – Bile leak due to other causes like trauma and other surgeries.
- Strasberg – Bismuth classification was used to classify the level of bile duct injury.

### RESULTS

The presenting complain that led to diagnosis of IBDI i.e., bile leak from drain or main wound, biloma, biliary peritonitis, cholangitis and obstructive jaundice were recorded for each patient.

#### Time of diagnosis –

1. During cholecystectomy
2. Postoperative –
  - 2A. Within first 48-72 hours.
  - 2B. After 48-72 hours.

### PRESENTING COMPLAINS

Two patients were diagnosed with bile duct injury intra-operatively.

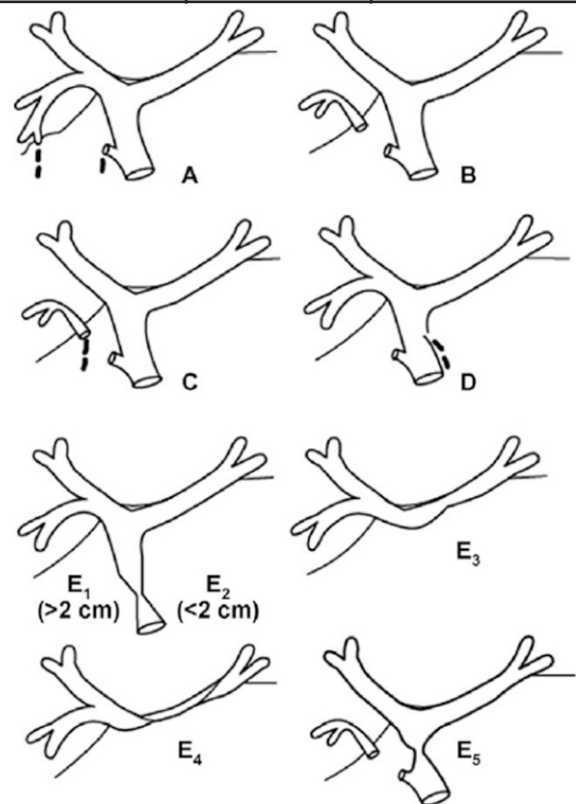
Two patients were diagnosed after they developed biliary peritonitis.

Ten patients had bilious output in drain and seven patients developed obstructive jaundice.

#### MANAGEMENT – 1

Out of the two patients who were suspected to have intra-operative bile duct injury –

TYPE/LEVEL OF INJURY	NO. OF CASES (20)	PERCENTAGE
A	2	10%
B	4	20%
C	0	0%
D	2	10%
E1	1	5%
E2	6	30%
E3	4	20%
E4	1	5%



In one patient, drain placement was done followed by ERCP stenting within 48 hours.

In second patient, T – tube was placed but patient had to undergo ERCP with stenting the next day.

#### MANAGEMENT – 2A

Two patients presented with biliary peritonitis and had to be explored.

One patient was explored within 48 hours – multiple drains were placed and patient could be salvaged.

Another patient presented on post op day 4 – laparotomy was done with multiple drain placement with feeding jejunostomy but could not be saved.

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## MANAGEMENT – 2 B

16 patients along with 1 who had survived laparotomy were monitored daily on basis of –

1. Vital parameters like temperature, pulse rate, blood pressure, respiratory rate and air entry.
2. Per abdomen findings like distention, tenderness or guarding, peristalsis.
3. Development of signs of obstructive jaundice like passage of clay coloured stool, icterus and pruritus.
4. Biochemical markers like hemogram and liver function tests.
5. Ultrasound was serially done at monthly interval or according to symptom of patient to monitor presence or absence of collection, biliary tree – size and level of cut off, echotexture of liver.
6. ERCP was attempted in 2 patients but had failed.
7. MRCP was done and used as a main guideline for plan of management.
8. Decision was taken to operate this patients after the bile leak had stopped, proximal duct had dilated to at least 1.5 cm, there was no collection and patient had been built up nutritionally but before patient started developing liver cirrhosis.
9. This was usually between 2-3 months following surgery.

## OPERATIVE TECHNIQUE OF BILE DUCT DISSECTION AND ROUX-EN-Y HEPATICO-JEJUNOSTOMY RECONSTRUCTION

- Extra hepatic biliary tree was explored upto confluence and even beyond according to level of injury.
- Satisfactory bleeding from the cut end was ensured.
- Roux loop of jejunum was transferred to upper abdomen via transverse colon.
- Single layer duct to mucosa hepatico-jejunostomy was performed with absorbable suture material vicryl or PDS – 3-0 or 4-0.
- Drain was placed in all patients.

### CONCLUSION

Intraoperative diagnosis is difficult in cases of IBDI but after 24-48 hours – prompt intervention in patients with developing biliary peritonitis and delayed intervention in stable patients with close follow up of their clinical course is crucial in preventing IBDI related mortality and morbidity.

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## Case Report

### Anesthetic Management of Post Acid Ingestion Esophagopleural Fistula Posted for Fistula Repair – Case Report

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**Keywords :** Esophagopleural Fistula, Post Acid Ingestion

#### ABSTRACT

**Introduction:-** The esophagopleural fistula can occur as an iatrogenic complication due to trauma followed by repeated dilatation of esophagus in a patient's of post acid ingestion stricture of esophagus. There are chances of difficult airway in such kind of patient due to distorted oral, pharyngeal and glottic anatomy. In this case lung isolation provided with double lumen tube insertion.

**Aims :-** are protection of the healthy lung, improve exposure of surgical field, provide hemodynamic stability and adequate analgesia for pain relief. Patient was managed successfully with GA+thoracic epidural with double lumen tube insertion.

**Result :-** Perioperative period was uneventful with lung isolation and excellent pain relief with thoracic epidural analgesia.

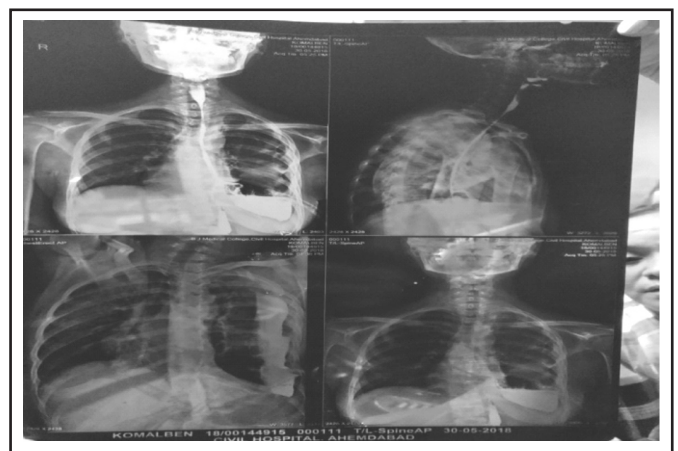
**conclusion :-** Such patient can be managed successfully with good lung isolation, adequate analgesia and continuous hemodynamic monitoring with IBP and CVP.

#### INTRODUCTION

Acquired esophagopleural fistula is not so common. Likely Causes of fistula are tuberculosis, carcinoma, post pneumonectomy and as a part of iatrogenic procedure (most common variety). Case history:- A 22 year old female posted for fistula repair for left esophagopleural fistula. Patient had past history of acid ingestion before 2 years. She underwent Upper GI endoscopy multiple times under GA for esophageal stricture dilation. After last endoscopy patient developed difficulty in breathing which was insidious in onset gradually progressive then patient was diagnosed as esophagopleural fistula and hydropneumothorax for which ICD inserted on left side. General Examination :- patient was poorly built and cachexic and pallor was present. (weight 42kg, height 152 cm). In systemic examination specially Respiratory system:- decreased air entry over left lung with ICD in situ on left side with good chest movement. All Routine investigations were within normal limit except PFT suggestive of moderate obstruction and haemoglobin. HB was 9.6 gm%. IDL (indirect laryngoscopy) examination showed bilateral vocal cord normal and mobile. Fibrotic band

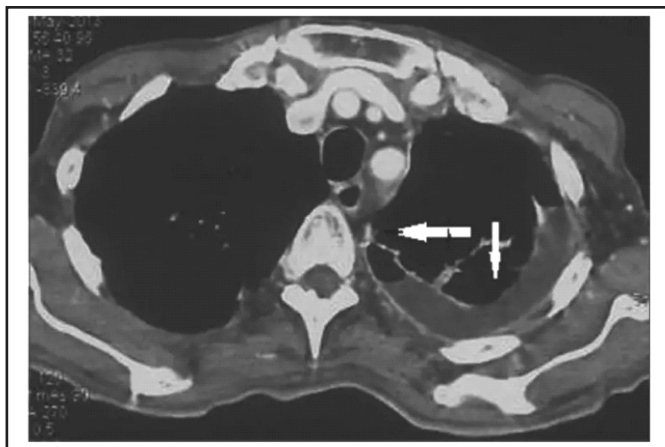
extending from epiglottis to posterior pharyngeal wall and lateral pharyngeal wall. ABGA (arterial blood gas analysis):- pre op ABGA shows Po<sub>2</sub>-96.6, pco<sub>2</sub>-37.8, PH 7.4, HCO<sub>3</sub>-24.5, Spo<sub>2</sub>-99.6%. Chest radiograph showed air fluid level in left lower lung field. Blunted left CP angle and ICD noted on left upper zone. ICD in situ left side. Barium swallow examination showed fistulous communication between esophagus and left pleura

**Fig. 1. fistulous tract between esophagus and pleura**

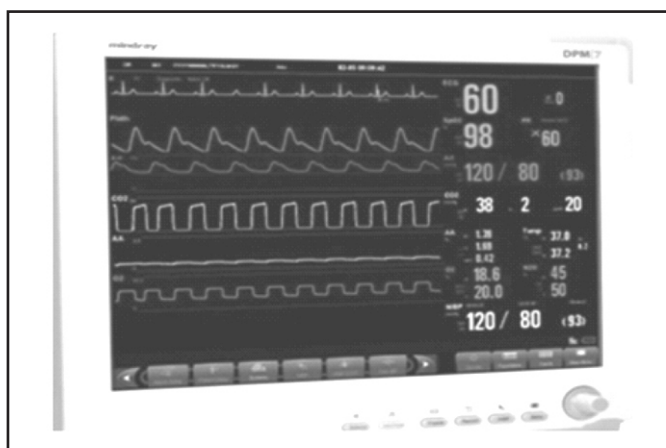


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**Fig. II. CT thorax showed Left hydropneumothorax with esophagopleural fistula.**



**Figure III : Intraoperative monitoring**



The patient was electively posted for Thoracotomy ligation of fistula. Pre operative optimization :- appropriate antibiotic therapy , bronchodilators,nebulization, airway humidification ,chest physiotherapy and incentive spirometry was done to facilitate her postoperative recovery.patient's relative were explained the risk of anesthesia and Informed written consent was taken in ASAIV with post op ventilator support . Anesthesia plan:- we planned General anesthesia using DLT for lung isolation and thoracic epidural catheter insertion for periop analgesia. Patient was taken inside the OT and routine monitors were applied (ECG, BP, SPO<sub>2</sub>, Temperature) and urine output was monitored .In OT two large wide bore peripheral intravenous access was secured in the operation theatre. Central venous access was secured in the right internal jugular vein and arterial line was secured in right radial artery under ultrasonography guidance .Invasive blood pressure

monitoring was done after arterial line placement.In Premedication glycopyrrolate (4 mcg/kg), ondansetron (0.15 mg/kg), fentanyl (2 mcg/kg) given intravenously. Thoracic epidural catheter placed in sitting position at D7-D8 level. Test dose xyloadrenaline 2% 2 cc given in epidural.General anaesthesia was given with propofol (2.5mg/kg) and suxamethonium (2 mg/kg).Intubation was done with right sided cuffed double lumen tube number 32.As anatomy was distorted we ,faced difficulty in intubation as well as positioning of double lumen tube(DLT) which required two attempts for placement.Confirmation was done with ETCO<sub>2</sub> monitoring. Proper placement of position was done with alternate clamping of tracheal and bronchial lumen of tube with simultaneous auscultation of lung field. Maintenance was done with oxygen, sevoflurane and vecuronium (0.1 mg/kg) ventilation of both lung was continued until positioning of the patient. Thereafter right lateral position was given and the left lung was isolated and right lung was ventilated through the bronchial lumen of the DLT.Ventilatory settings was tidal volume of 250 ml and frequency of 16 per minute.Pressure points were taken care. Analgesia was provided with volume of 8 ml 0.25% bupivacaine was given as epidural bolus .

All measures to maintain hypoxic pulmonary vasoconstriction (HPV) were taken.Intermittent suctioning was performed. Intraoperative ABGA revealed satisfactory oxygenation.Thoracotomy ligation of fistula was performed.Bronchial stump integrity was checked by applying positive end expiratory pressure (PEEP).Esophageal splaying was sutured.Intraoperative 2 packed cell volume (PCV) total 480 ml and 1000 ml NS and 500 ml RL and 500 ml DNS given.Urine output was 1350 ml at the end of surgery.Intraoperative period was uneventful with no complications.Reversal was started after return of spontaneous respiratory attempts. Patient was given inj glycopyrrolate (8 mcg/kg)IV and inj neostigmine (0.05mg/kg) IV.After through suctioning DLT removed. After extubation patient was conscious and following verbal command.Patient was given nebulisation with salbutamol and budesonide . Post op ABGA was within normal limits. Duration of surgery was 4.5 hr and post op patient was stable and shifted to ICU for observation. Contrast esophagogram performed after 10 days showed "NO LEAK" and ICD was removed after which she was discharged.

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## DISCUSSION

### GOALS of anesthesia in such kind of patients are :-

1. difficult intubation due to post acid ingestion distorted laryngeal and pharyngeal anatomy.
2. difficulty in oxygenation and/or ventilation depending on the size and the site of fistula
3. Prevention of sudden hypoxemia during one lung ventilation(OLV)
4. maintainance of HPV
5. ventilatory management during handling of the airway by surgeons.
6. prevention of soiling of normal dependent lung
7. postoperative analgesia to facilitate early recovery

such kind of patient's require lung isolation and that can be provided by DLTs which prevent soiling of other lung, and allows suctioning of the affected lung during surgery. Maintainance of HPV can be done with CPAP to the lung being operated. PEEP can be applied/continuous oxygen sufflation with catheter to the dependent lung. central venous access with monitoring of CVP ensures optimal fluid management perioperatively as thoracic surgeries are associated with major fluid shifts

and it is important to avoid overhydration as water-logging of the healthy lung adversely affects the outcome by delaying weaning. Continuous IBP monitoring helps to maintain hemodynamic stability and intermittent ABGA monitoring

## CONCLUSION

Optimal ventilatory management with ONE LUNG ANESTHESIA, fluid management guided by CVP, IBP and ABGA (oxygenation and ventilation) excellent intraoperative and postoperative analgesia with thoracic epidural, and the team efforts by the anesthetist and surgeon provide the best possible outcome.

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## Case Report

### Study Of Effectiveness And Safety Of Inj DMPA In Postpartum Period

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**Keywords :** injection DMPA, contraception, postpartum, fertility.

#### ABSTRACT

Depot medroxyprogesterone acetate(DMPA) provides safe and effective contraception in postpartum period

**Aims and objectives :** to study acceptance and compliance of DMPA, observe side effects related to usage of DMPA and establish its effectiveness as contraception method.

**Methods :** this is prospective study carried out at Obstetrics and Gynaecology department of tertiary care hospital. Over period of 9 months followed up on OPD basis.

**Result :** out of 200 cases selected 42% were in age group of 26 to 30, 51% were from lower socio economic class. Amenorrhoea and irregular spotting found in 68% and 42% respectively. There was no cases of pregnancy in present study.

**Conclusion :** DMPA is an effective, safe and convenient method of contraception in lactating period. Proper counseling will increase acceptance of DMPA.

#### INTRODUCTION

Population explosion is one of the major problem of the developing countries like India. Contraceptive prevalence in our country is 54.8%<sup>[1]</sup>. Moreover contraception in postpartum period is a major challenge. Popular methods offered are barrier, progesterone only pills, IUCD, sterilization, Depot medroxy progesterone (DMPA). Inj Depot medroxy progesterone has been found to provide effective, long acting and reversible contraception. Its 12 week's dosing results in patient convenience, avoiding need for daily compliance or use at time of intercourse<sup>[2]</sup>. It is to be given deep intramuscular so not much training of staff is required. One injection at every three months and less side effects makes compliance better in temporary motivated postpartum women specially in low resource settings.

Ideal time to initiate DMPA is within 5 days of onset of menses this ensures patient is not pregnant and prevents ovulation during first month of use. WHO recommends DMPA in breastfeeding women be initiated at 6 weeks due to theoretical concerns about infant safety<sup>[2]</sup>. In indian set up delaying contraception until 6 weeks postpartum may increase risk of unwanted pregnancy and large amount lost to follow up. ACOG recognizes the need for contraception against theoretical neonatal risks and endorses earlier initiation of DMPA.<sup>[3]</sup>

Injection DMPA has typical use failure rate of 0.3 per 100 woman years<sup>[4]</sup>. Major side effects with DMPA includes

menstrual disturbance, weight gain, mood changes etc. Inj DMPA does not have any permanent effect on fertility. It has been shown that after discontinuation of DMPA; normal period cycle returns by 8 months and normal fertility returns by 18 months.

Here we aim to study acceptance and effect of inj DMPA in immediate postpartum period

#### MATERIALS AND METHODS

This is a prospective study conducted at obstetrics and gynaecology department, tertiary care centre, Ahmedabad. After approval from institute, and patients consent before joining this study.

Study conducted for total duration of 9 months from September 2017 to January 2019. A total of 200 women who were apparently healthy, aged 21 to 35 years, breastfeeding, ready to follow up and wanted a long term reversible contraception were recruited for this study.

Eligibility criteria

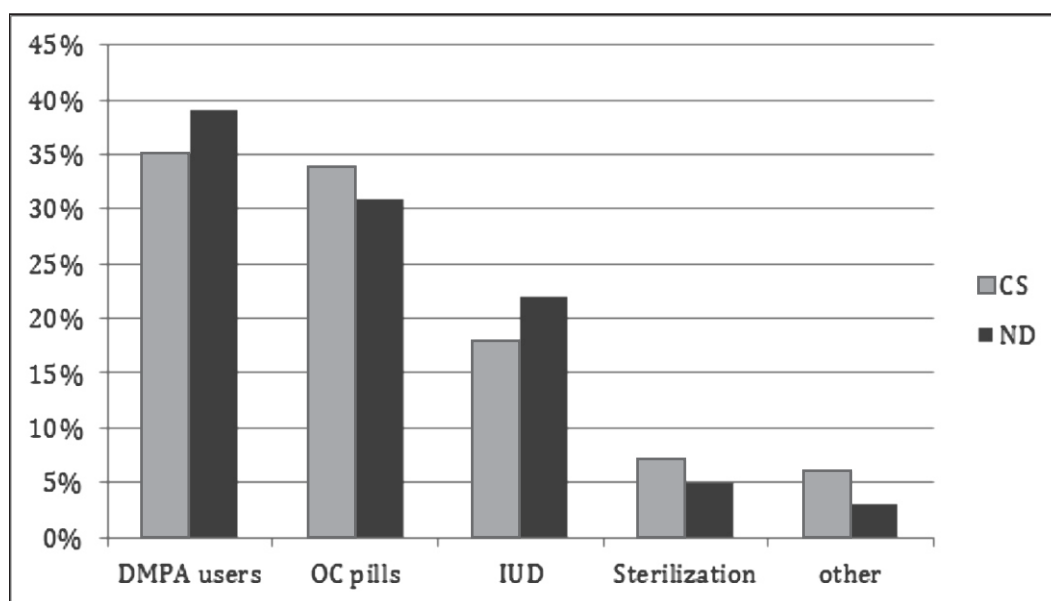
- Age 21 to 35 years
- Patient desiring long term, non coitus depended contraceptive method
- Willing for regular follow up and gives consent for study
- Apparently healthy with no associated medical condition like anaemia, diabetes, hypertension, cardiac disease.

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**TABLE 1**

Delivery rate	CS(39%)	ND(51%)
DMPA users	35%	39%
OC pills	34%	31%
IUD	18%	22%
Sterilization	7%	5%
other	6%	3%



**PATIENTS CHARACTERISTICS**

(1) Age and parity

Our study included apparently healthy women in age group of 21 to 35.

**TABLE 2**

Age/parity	Primi para	2 <sup>nd</sup> para	3 <sup>rd</sup> and more
21-25	18	24	12
26-30	26	36	20
31-35	26	20	18

(1) Majority of our patients were from lower middle class (51%), 38% were from lower socio economic class while 11% from upper middle class.

(2) 72% took more than 3 injections and 9% took only one injection and left study in the middle.

- Had term delivery and breast feeding at the time of discharge

All women willing for contraception were given options and explained well about benefits and side effects of each contraceptive methods. Women opting for inj DMPA were chosen for this study. After proper counseling and informed written consent 100 women were enrolled in the study. All women underwent through general physical examination. DMPA 150 mg IM given deep intramuscular in upper lateral gluteal region using 24 gauge needle. The

schedule consisted of injection within 6 weeks of postpartum. All women were asked to maintain diary to remember the date of their next injection. All women were followed up for 1 year after the first injection for side effects, failure, patient satisfaction and willingness of continuation. Patient wanted to go for any other method were excluded from study.

**RESULTS**

This is single centred study, rate of deliveries in our hospital is around 10,000 per year. Table 1 shows

average no of women in bothe LSCS and vaginal delivery(ND) cases who choose DMPA as contraceptive along with women who chose other method. Around 35% to 39% women in postpartum period chose DMPA, while OC pills found to be 2nd contraceptive of choice.

**TABLE 3**

No. of injections	No. of patients
1	18
2	14
3	26
>3	144

#### SIDE EFFECTS

Table 4 shows important side effects of this contraception. Amenorrhoea(68%) and irregular bleeding(42%) were most common side effects. Irregular bleeding was not heavy rather continued on and off spotting. None experienced an episode of profuse bleeding.

**TABLE 4**

Side effects	No of patients
amenorrhoea	136
Irregular bleeding	84
Weight gain and mood changes	16
Headache and abdominal pain	18
Miscellaneous	10

\*backache, dyspaerunia, erythma nodosum.

(1) 98% women in our study group were satisfied with their lactation amount

All the subjects were followed to complete a one year follow up. At the end of study 70% of women were happy with DMPA as contraception and opted to continue it while 25% switched to alternate contraceptive methods.

#### DISCUSSION

The current TFR (Total fertility rate) of 2.4 in 2012 is down from 3.1 children per woman in 2001. Contraception Prevalence Rate (CPR) for morden methods has been increasing steadily from 36.5% in 1992-1993 to 48.5% in 2005-2006[5]. 1.5% live births occur within one year of previous pregnancy<sup>[6]</sup>.

Birth control methods have been used since ancient times, but effective and safe methods only became available in 20th century<sup>[7]</sup>.

Planning provision and use of birth control is called family planning<sup>[8]</sup>.

Depot medroxyprogesterone acetate is highly effective,

safe and long term method of contraception. Its easy 3 monthly administration schedule requires minimal patient compliance.

Major complication leading to discontinuation of its use is amenorrhoea(68%) and related menstrual irregularities (48%). Irregular bleeding is scanty and rarely heavy thus fear of anaemia is less, besides amenorrhoea is beneficial in women with anaemia, menorrhagia and dysmenorrhoea. Weight gain associated with DMPA use was only marginal and could not be attributed to DMPA alone. DMPA has many other non-contraceptive benefits such as prevention of endometrial cancer, ectopic pregnancy, dysmenorrhoea and in mangment of endometriosis[9]. Use of DMPA has no permanent effect on fertility. Unlike barrier method it is coitus independent and hassles of daily intake like combined pills was not there.

Most important issue regarding use of DMPA is that of patient information. Pre-use counseling is essential tool to minimize drop out rates.

#### CONCLUSION

Injectable DMPA in postpartum period is safe and effective method with less side effects hence it should be available as a first line method to all postpartum women who wish a long term reversible method of contraception. Menstrual side effects limiting use of DMPA can overcome with proper counseling and education.

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## Case Report

### Association Of Retinitis Pigmentosa(Rp) With Mental Retardation(Mr) and Subluxated Lens

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**Keywords :** Mental Retardation, Retinitis Pigmentosa, Subluxated Lens.

#### ABSTRACT

Retinitis Pigmentosa is pigmentary retinal dystrophy characterized by triad of perivascular pigmentary changes resembling bone corpuscles,presence of pale and waxy optic disc and attenuated thread like retinal blood vessels on fundus examination which is associated with common syndromes.We report a case of 35 year old Mentally Retarded Male having Subluxated lens with Retinitis Pigmentosa.

#### INTRODUCTION

Retinitis Pigmentosa is slowly progressive bilateral primary pigmentary retinal dystrophy due to apoptosis affecting rods more than cones resulting in night blindness(earliest feature), which is inherited as Autosomal Recessive condition, affecting Males more commonly, showing characteristic triad of perivascular pigmentary changes resembling bone corpuscles,presence of pale and waxy optic disc and attenuated thread like retinal blood vessels on fundus examination which is associated with common syndromes.

#### CASE REPORT

35 year old Mentally Retarded Male presented with chief complaint of Left eye Redness,Pain and Watering since 3 days.Torch Light findings were confirmed by Slit Lamp Examination on which Left eye was Edematous Congested having Corneal Edema,Shallow Anterior Chamber,Semidilated Fixed Pupil and Anteriorly Subluxated Lens with Intraocular Pressure(IOP) not recordable on Non Contact Tonometer(NCT) and patient being uncooperative for applanation tonometry.Right eye having Inferotemporally Subluxated Lens with 15 mmHg IOP on NCT.Due to Mental Retardation,Patient was unable to cooperate for Visual Acuity testing.Glow not seen on Fundus examination with Subluxated Lens in both eyes.Both eye having Vitreous Degeneration on B Scan Ultrasonography.

Surgical Management planned after written and informed

consent from legal guardian.Psychiatric evaluation of patient was done.Preoperatively Tobramycin eye drops(eds) four times/day(QDS),Prednisolone eds 6 times/day and Hypertonic saline eds 5 times/day was started in Left eye with Intravenous 500ml 20% Mannitol Stat and Tablet Acetazolamide (250 mg) QDS with banana or coconut water.On IOP control next day Left eye cataract extraction with Iris Claw Lens Implantation was done under General Anesthesia(Figure 1).Postoperatively Fundus Examination of Left eye had tilted disc with pallor,generalized vessel attenuation and bony spicules indicating Retinitis Pigmentosa(Figure 2).5 months later Elective Right Eye Cataract Extraction with Iris Claw Lens Implantation was done under General Anesthesia(Figure 3,4).Postoperative fundus examination of right eye revealed similar picture of Retinitis Pigmentosa(Figure 5).

#### DISCUSSION

Common Syndromes associated with Retinitis Pigmentosa:

1. Laurence Moon Biedl Syndrome  
Most Common  
Mental Retardation + Polydactyly + Obesity + Hypogonadism
2. Cockayne Syndrome  
Mental Retardation + Ataxia + Nystagmus
3. Kearns-Sayre Syndrome  
Ocular Myopathy + Heart defects

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- 
4. Refsum disease  
Polyneuropathy + Cerebellar Ataxia + Deafness
  5. Usher's Syndrome  
Labyrinthine deafness
  6. Barren-Kornweig Syndrome  
Abetalipoproteinemia + Acanthocytosis
  7. NARP Syndrome  
Neuropathy + Ataxia

But association of Retinitis Pigmentosa in Mentally Retarded with Subluxated Lens is a new presentation.

Have we found a New Syndrome?

### CONCLUSION

Common Syndromes are associated with Retinitis Pigmentosa but we present case of 35 year old Mentally Retarded having Subluxated Lens with Retinitis Pigmentosa which is a new presentation.

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## Case Report

### Straw coloured Right sided Pleuropancreatic effusion: a diagnosis not to be missed

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**Keywords :** Pleural effusion, Pseudocyst of Pancreas, Pancreatitis

#### ABSTRACT

Pleural effusion secondary to chronic pancreatitis is an uncommon condition accounting for less than 1% of patients and usually left sided, haemorrhagic. Rarely it may be right sided and straw coloured causing difficulty in establishing the diagnosis, especially if the chest symptoms are disproportionately more than abdominal symptoms. We report a rare case of 41 years old alcoholic male who had history of right sided chest pain, cough with expectoration, breathlessness, abdominal pain for 2 months. Pleural fluid examination suggested straw coloured, lymphocytic predominant exudate with low adenosine deaminase and high lipase and amylase level. To rule out alcoholic pancreatitis CT scan thorax and abdomen was done, which demonstrated pancreatic pseudocyst and right sided gross pleural effusion. Conservative treatment was given in form of intercostal chest tube drainage, higher antibiotics, somatostatin analogue low fat diet for three to four weeks.

#### INTRODUCTION

Pancreatic pleural effusion due to chronic pancreatitis with pseudocyst accounting for less than 1% of cases. Pleural fluid is usually haemorrhagic, left sided with markedly increased amylase activity. Because of low incidence, we are presenting a case of right sided pleural effusion secondary to chronic pancreatitis managed conservatively. Pancreatic pleural effusion usually presents on left side. Gross pleural effusion is a known but rare complication of chronic pancreatitis.

#### CASE REPORT

A 41-year-old male patient presented with right side chest pain, cough, sputum and upper abdominal pain for a period of 2 months. He had history of tobacco chewing since 5 years and consumed 90 ml country liquor/day for 20 years and last intake was before 2 months with no history of smoking. His vital signs (temperature, pulse, Blood pressure and spo2) were within normal limit. Expansion of the right hemi-thorax was diminished. Percussion tone was dull and breath sounds were diminished and vocal resonance decreased over right side of chest. Laboratory reports showed complete blood counts, renal function test, liver function test and RBS within normal limits. On the chest X-ray- right sided homogenous opacity, obliteration of right costophrenic angle with shifting of trachea and mediastinum opposite side suggestive of right sided pleural effusion (fig. A) and

also confirmed by USG Thorax.

His pleural fluid examination revealed uniformly straw coloured fluid with a total cell count of 160/cu mm with 90% neutrophils, 10% lymphocytes, Malignant cells were not found in fluid cytology report. Microorganisms, AFB and fungal elements were not found. Biochemical analysis showed exudative fluid with total proteins 3.4 g/dl, glucose 101 mg/dl, and Adenosine Deaminase (ADA) 45.66 U/L.

After all these investigations we could not find etiological diagnosis. As patient is alcoholic we undergo for USG abdomen to rule out alcoholic pancreatitis and reports showed pancreatic pseudocyst with atrophic pancreas so we sent pleural fluid lipase and amylase, which was 1997 U/L and 57 U/L respectively.

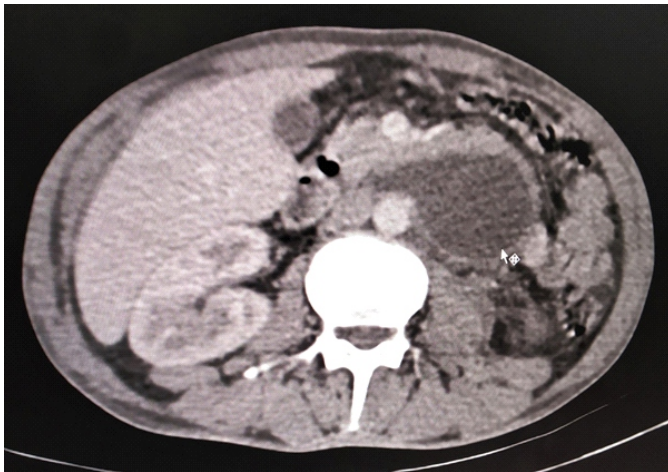
Patient underwent CT thorax and abdomen and it showed pancreatic pseudocyst with atrophic pancreas (fig. b) with massive right sided pleural effusion. Intercostal drainage tube was inserted and surgical consultant opinion was taken and was put on higher antibiotics for 4 weeks, somatostatin analogue and low fat diet as per their advice. By above management patient was improved, ICD removed and patient was discharged.

The chest X-ray- right sided homogenous opacity, obliteration of right costophrenic angle with shifting of trachea and mediastinum opposite side suggestive of right sided pleural effusion (fig. A)

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CT thorax and abdomen and it showed pancreatic pseudocyst with atrophic pancreas (fig. b)

### DISCUSSION

Pleural effusion often occurs as a complication of pancreatic disorders such as acute pancreatitis, pancreatic abscess, pseudocyst, and chronic pancreatitis.<sup>1</sup> The incidence of pleural effusion with acute pancreatitis in older reports was about 3 – 7 % .<sup>2</sup> Chronic pancreatitis is mostly caused by heavy alcohol consumption.<sup>3</sup>

The pathogenic mechanism involved in the formation of the pleural effusion include direct contact of pancreatic enzymes with the diaphragm, haematogenous transfer of pancreatic enzymes into pleura. Transfer of pancreatic secretions through trans diaphragmatic lymphatics and formation of pleuropancreatic fistula which results in direct communication of pancreatic pseudocyst with pleural cavity. Rarely there may spontaneous rupture of the pseudocyst into the pleural cavity causing massive pleural effusion.<sup>4</sup>

Pleural effusion due to a pancreaticopleural fistula is a rare complication of pancreatitis. Incidence is estimated at 0.4% in patients with pancreatitis rising to 4.5% in patients with an existing pancreatic pseudocyst. The diagnosis of pleural effusion secondary to pancreaticopleural fistula is based on a pleural effusion with raised pleural fluid amylase and imaging to confirm a pseudocyst or fistulous tract.

The available treatments include: (1) medical treatment with pancreatic rest, usually via NJ feeding, pancreatic enzyme replacement therapy, chest drainage and a somatostatin analogue; (2) endoscopic retrograde cholangiopancreatography with or without pancreatic stenting and (3) surgery. Medical treatment aims to reduce exocrine secretions from the pancreas by reducing pancreatic stimulation as a substantial number of pancreaticopleural fistulas will close spontaneously using conservative measures.<sup>5</sup>

### CONCLUSION

Right sided pleural effusion in the setting of pancreatitis is rare and being straw colour in nature is further extremely rare. Pancreatitis should be taken into consideration when patient is alcoholic and has elevated amylase level. Lack of awareness can result in delay in the diagnosis and morbidity. This case is, hence, presented to make the physicians aware of this rare presentation.

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