



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

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## 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.

Medical Education is the key edifice on which the generation of effectively trained health manpower depends, which in its turn is the key repository for an effective healthcare delivery system in the country towards diligent actualization of the core concept of the 'Welfare State' enshrined in the Constitution. The 'health' of medical education in the domain of 'quality centrality' therefore, turns out to be the guarantee of the 'health' of a meaningful diligent 'outcome based' healthcare delivery system. It is for this very reason regulation of medical education has to be objective, autonomous, responsive, responsible and yet accountable.

In order to ensure fulfillment of the set out objectives of medical education is statutorily regulated through a body created by a Parliamentary Enactment in the name 'Medical Council of India' in terms of Indian Medical Council Act, 1933 repealed by Indian Medical Council Act, 1956, which came to be amended in the year 1964, 1993, 2001, 2015 and 2016 respectively. However, the Government of India, intends to repeal the Indian Medical Council Act, 1956 as amended from time to time by a proposal titled 'National Medical Commission Bill 2017/18' which is pending consideration by the Lok Sabha since March, 2018.

The Government of India, superseded elected Medical Council of India reconstituted by itself on 5th November, 2013 by an ordinance dated 26th September, 2018 availing authority vested with it under section 3(A) of the IMC Act, 1956.

The said dissolution has been condemned by IMA in vociferous terms stating the said action on part of the Government of India, to be autocratic, undemocratic, unilateral, highhanded, without citing any reasons for the same in public domain and solely aimed at ensuring that elections for constituting of the Medical Council of India by 5th November, 2018 are scuttled, which is nothing short of an abject cowardice.

IMA with its total solidarity and unity is committed to oppose the nefarious design of the Government of India, in pushing through the National Medical Commission Bill by styling it as a 'Money Bill', in total contravention of Article 110 read with 117 of the Constitution of India with all its might in the interest of people and profession alike.

It has successfully resisted the might of the Govt. for well over past 9 months and resolves with purpose, determination and direction to resist the same, come-what-may. This is the miracle that the strength and unity of IMA has been able to usher in and would continue to bring desired results in public interest. The resolve of the IMA on this count is unending till the desired results are achieved in a meaningful sense.

Long Live IMA

Jai IMA

**DR. S. S. VAISHYA**  
(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. GMJ has completed seven decades of its publication. 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. Moreover, now, as you all are aware, our GMJ is indexed in Index Copernicus International and thus it has become MCI listed valid index medical journal. 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>**

We would like to mention here, the determined and committed efforts made by our enthusiastic and dynamic past president Dr. Yogendra Modi and hon. Secretary of IMA GSB Dr. Kamlesh Saini along with our ex-editor Dr. Amitbhai P. Shah and Dr. Urvesh Shah (GCS medical college Ahmedabad) in maintaining indexation status of GMJ with Index Copernicus International of. Dr. Urvesh Shah's painstaking efforts in up loading all the issues of GMJ on Index Copernicus website made them available there. We extend our sincere thanks to Dr. Chinmay Shah (Bhavnagar medical college) for helping us time to time.

Our sincere thanks to IMA GSB president Dr. S. S. Vaishya saheb and hon. secretary Dr. Kamlesh Saini for encouragement and suggestions and giving us free hand in publication of this journal. We are grateful to him We are also grateful to IMA GSB past presidents Dr Kirtibhai Patel, Dr. Jitubhai Patel and Dr. Mahendrabhai Desai for their guidance and help.

With regards,

**DR. K. R. SANGHAVI**  
Editor-IMA-GSB-GMJ

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## ORIGINAL ARTICLE

### A Study of Fetomaternal outcome in Pregnancies with Polyhydramnios

Dr Tushar M. Shah\*, Dr Tejal Shah\*\*, Dr Brinda Patel\*\*\*

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**KEY WORDS :** Polyhydramnios, AFI, congenital anomalies

#### ABSTRACT

**INTRODUCTION :** Definition of polyhydramnios is an AFI >24cm on any linear array real time obstetric ultrasound OR Single amniotic fluid pocket more than equal to 8cm on obstetric ultrasound. Polyhydramnios has been long since recognized as known complication of pregnancy. With the advent of ultrasonography, the diagnosis and management of polyhydramnios has been easy and better. **AIMS AND OBJECTIVES :** To evaluate the various maternal and fetal causes of polyhydramnios and to study the maternal outcome in terms of intrapartum and postpartum complications and fetal outcome in terms of maturity and occurrence of congenital anomalies in pregnancies complicated with polyhydramnios. **MATERIAL AND METHODS :** The study was conducted in the Department of Obstetrics and Gynaecology, Civil hospital, B.J. medical College, Ahmedabad. It was a prospective observational study of 50 cases of polyhydramnios, carried out between the period of January to November 2017. **RESULTS :** In the present study we found that: Incidence of mild polyhydramnios was 69%, moderate was 22% and severe was 9%. Polyhydramnios was idiopathic in 61% of the cases and 31% cases were due to anomalies, PIH was the most common maternal complication followed by preterm labour and malpresentation. Looking at the neonatal outcome 31% had congenital anomalies. **CONCLUSION :** It is hence concluded that polyhydramnios is a common condition complicating pregnancy. It is mostly an idiopathic condition and among known etiologies most common is congenital fetal malformations. With increase in severity of polyhydramnios the maternal and perinatal outcomes tend to deteriorate. Each patient with sonographically diagnosed polyhydramnios should be completely investigated for anomalous baby and other possible etiological entities.

#### INTRODUCTION

The amniotic fluid is vital for the survival of the fetus and progress of normal labour. Throughout normal pregnancy, the amniotic fluid allows the foetus a room for growth, movement and development. It protects the foetus from sudden jerks and serves as a cushion. In polyhydramnios, this equilibrium shifts so that the net transfer of water is into the amniotic sac. This polyhydramnios is often indicative of foetal, placental or maternal problem. It occurs in about 1% of pregnancy. **Definition** of polyhydramnios is an AFI >24cm on any linear array real time obstetric ultrasound<sup>1</sup> OR Single amniotic fluid pocket more than equal to 8cm on obstetric ultrasound OR AFI > 95th percentile for gestational age. **Etiology :** Polyhydramnios can occur due to excessive production of liquor or defective absorption<sup>2</sup>. It can be Idiopathic: in up to two-thirds of the cases cause could be unknown. Maternal causes include diabetes, renal or cardiac disease. Fetal causes include twin pregnancy,

congenital anomalies like anencephaly, spina bifida, oesophageal or duodenal atresia, etc. Placental causes like placental chorioangioma.

**Complications :** Polyhydramnios has been long since recognized as known complication of pregnancy<sup>3</sup>. It has been known to be associated with many maternal and fetal complication. Such as increased incidence of preeclampsia, malpresentation, persistence of floating head, premature rupture of membranes, preterm labour, placental abruption. Fetal complications include increased perinatal mortality mainly due to prematurity and congenital anomalies<sup>4,5</sup>.

With the advent of ultrasonography, the diagnosis and management of polyhydramnios has been easy and better. Early diagnosis, screening and management has resulted in better maternal and fetal outcome.

#### AIMS AND OBJECTIVES

- To evaluate the various maternal and fetal causes of polyhydramnios.

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- To study the maternal outcome in terms of time and mode of delivery, intrapartum and postpartum complications and fetal outcome in terms of maturity and occurrence of congenital anomalies in pregnancies complicated with polyhydramnios.

### MATERIAL AND METHODS

The study was conducted in the Department of Obstetrics and Gynaecology, Civil hospital, B.J. medical College, Ahmedabad. It was a prospective observational study of 50 cases of polyhydramnios, carried out between the period of January 2017 to November 2017 in Civil Hospital, Ahmedabad. A detailed history was taken including previous obstetric history. General physical examination was done in every case. Obstetric examination included per abdominal, per speculum, and per vaginal examinations. Routine investigations were carried out. Specific investigations were carried out when required. Ultrasound was done in every case. Management protocol was decided considering chief complaints of patient, maternal and fetal condition. Mother and baby were followed up till discharge and further follow up was advised in babies with any anomaly.

### RESULTS

In the present study of 50 cases of polyhydramnios between the period of Jan to Nov 2107 the following observations were made:

- The incidence of polyhydramnios in our study was 0.56%(50 cases out of 8814 deliveries)

STUDY	INCIDENCE
Barry(1958)	0.68%
Murray(1964)	0.70%
Hill (1987)	0.93%
Pri -Paz (2012)	1-2%
Our study	0.56%

**Table-I Distribution According to AFI in USG**

STUDY	MILD (AFI 25-29)	MODERATE (AFI 30-34)	SEVERE (AFI 35 OR ABOVE)
JACOBY	59.3%	35%	6.4%
HILLS	79%	16%	5%
MANY	72%	20%	8%
DASHE	66%	22%	12%
PRIPAZ	64%	21%	9%
OUR	69%	22%	9%

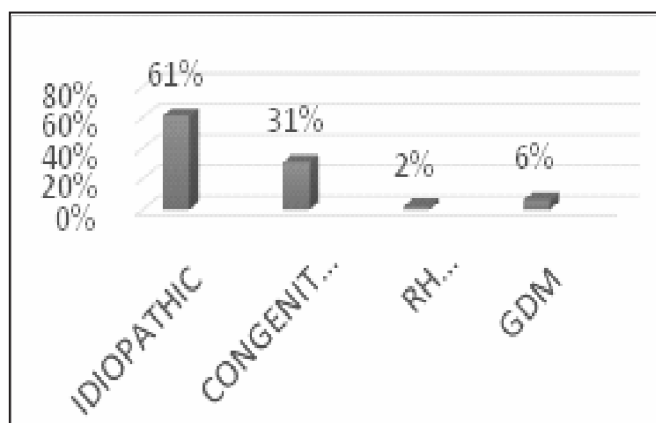
**Table-II Distribution According to Mode of Delivery**

Mode of delivery	Moya Study	Jacoby study	Zamah study	Our study
Normal	71.60%	64.8%	82%	68%
Lscs	21.6%	20.8%	12.8%	30%
Instumental (vaccum)	-	5.3%	2.6%	2%

**Table-III Associated Maternal Complications According to AFI in USG**

	Associated maternal complication	Number	Mild	Moderate	Severe
1	Preterm labour	4	2	1	1
2	Pih	8	5	2	1
3	Malpresentation	4	1	2	1
4	Prom	2	1	1	0
5	Postdate	2	2	0	0
6	Rh incompatibility	1	0	1	0
7	Gdm	3	2	1	0
8	Pph	2	0	1	1
9	Cord prolapse	1	0	1	0
10	Abrupton	1	0	1	0

**Chart-I Distribution According To Possible Etiology Of Polyhydramnios**



**Table.-IV Distribution According to Fetal Outcome**

Fetal outcome	Percentage
Live born	80%
Congenital malformations	31%
Still born	11%
Neonatal deaths	9%

**Type-V Distribution According to Type of Congenital Anomaly**

System anomaly	Number	Mild Poly	Moderate poly	Severe poly
Cns	7	4	2	1
Cvs	2	1	1	-
Renal	1	1	-	-
Skeletal	2	1	1	-
Gastrointestinal	3	1	2	-

### DISCUSSION

In the present study of 50 cases of polyhydramnios we found that:

- The incidence of polyhydramnios was 0.56%. Which is similar to Barry(1958) and Murray(1964) studies. The incidence seems to be falling because of better antenatal care and folic acid supplementation to prevent fetal anomalies.
- The commonest age group of presentation was 21-25 years accounting for 42% of the cases. Polyhydramnios was more common in multigravida accounting for 68% cases. The commonest symptom was pain in abdomen and commonest time of presentation was in third trimester.
- Incidence of mild polyhydramnios was 69%, moderate was 22% and severe was 9%. This was comparable
- to Many(1995), Dashe(2002) and Pri-Paz(2012).Most cases are mild and there is sequential decrease in number of cases of moderate and severe polyhydramnios.
- 68% patient underwent normal vaginal delivery and 30% underwent LSCS.The incidence of caesarean delivery is higher than all other comparative studies. It may be so because of the increased incidence of LSCS over the years and also because of good baby weight and malpresentations.
- Polyhydramnios was idiopathic in 61% of the cases and 31% cases were due to anomalies, 2% has Rh

isoimmunisation and 6% had GDM.this was comparable to all other studies which all showed that most cases were of idiopathic origin.

- PIH was the most common maternal complication followed by preterm labour and malpresentation. On comparing our results with other studies we found that there is decreased incidence of diabetes and Rh isoimmunisation in the present studies owing to better antenatal management of diabetes and Rh isoimmunisation nowadays. Also the incidence of PPH has decreased due to active management of 3rd stage of labour.
- Looking at the neonatal outcome in our study 80% were born live and 31% had congenital anomalies. Most common congenital anomaly was that of central nervous system.

### CONCLUSION

It is hence concluded that polyhydramnios is a common condition complicating pregnancy. It is mostly an idiopathic condition and among known etiologies most common is congenital fetal malformations. Mostly patients with polyhydramnios have only mild increase in amniotic fluid and in such cases the maternal and perinatal outcomes are good. With increase in severity of polyhydramnios the maternal and perinatal outcomes tend to deteriorate. Each patient with sonographically diagnosed polyhydramnios should be completely investigated for anomalous baby and other possible etiological entities. Whenever an anomaly is detected it should be communicated to the parents and the prognosis and further management is to be discussed with neonatologist and paediatric surgeons. Each delivered neonate is to be screened thoroughly by the neonatologist as sometimes anomalies may have been missed in ultrasound examination.

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## ORIGINAL ARTICLE

### Use of Middle Ear Risk Index and Eustachian Tube Function as Parameters for Predicting the Outcome of Tympanoplasty

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**KEYWORDS :** MERI, ETF

#### Abstract :

Otitis media is an important and highly prevalent disease of middle ear and poses serious health problem worldwide in developing countries where large population lacks specialized medical care. It is important to assess the severity of this disease & accordingly predict the result of surgery. In this study of 67 cases of tubotympanic variety of CSOM we have used MERI & ETF as predictors for the outcome of tympanoplasty.

#### INTRODUCTION

Chronic suppurative otitis media (CSOM) is of two types tubotympanic (mucosal) and atticoantral (squamous). The atticoantral type (squamous type) is due to cholesteatomatous lesions. Tubotympanic type (mucosal) is mainly due to infection from the oropharynx and the nasopharynx and sources like gastro esophageal reflux diseases travels via the Eustachian tube into the middle ear.<sup>1</sup>

It is important to access the severity of disease and predict the outcome of surgical management. Goals of surgical management of chronic otitis media include removal of inflammation and creation of sound conducting mechanism in well aerated, mucosal lined middle ear cleft. Numerous prognostic factors affecting hearing among the patients with chronic otitis media have been discussed in this literature. Ossicular reconstruction is performed to attempt to restore continuity and support conduction capabilities of ossicular chain. Artificial reconstruction materials are alternative but have their own concern regarding audiological outcome and complication rates. There are many variables that may influence hearing results. MERI is one of the most reliable tool to evaluate the result of ossicular reconstruction and compare outcome among different studies.<sup>2</sup>

A normally functioning eustachian tube is an equally essential physiologic requirement for a healthy middle ear and normal hearing. Three main functions of eustachian tube are ventilation and regulation of middle ear pressure, middle ear clearance of secretions, and protection against nasopharyngeal sound pressure and reflux of nasopharyngeal secretions. A normal aerated middle ear cavity and normal antrum are important for middle ear functions.<sup>3</sup> Impedance audiometry (Toynbee's test) is an

essential tool to assess eustachian tube function (ETF) in perforated tympanic membrane and William's test is an essential tool to assess the ETF in intact tympanic membrane.

In this study we have used the middle ear risk index (MERI) developed by Kartush which generates a numeric indicator of the severity of the middle ear disease to stratify patient groups according to the severity of the disease and to evaluate the efficiency of MERI score in predicting the outcome of tympanoplasty.

#### AIMS AND OBJECTIVES

1. To assess the result of surgical treatment of tubotympanic chronic suppurative otitis media in relation to the MERI.
2. To study the effect of Eustachian tube function on result of tympanoplasty.

#### MATERIAL AND METHODOLOGY

This is a prospective study to assess the result of surgical treatment of tubotympanic chronic suppurative otitis media and its relation to the MERI & to study the effect of Eustachian tube function on result of tympanoplasty. The procedure to be performed was explained to the patients and their relatives and written informed consent was taken.

All the patients with discharging ear were treated conservatively using antibiotics, antihistaminic, decongestants and topical ear drops to be instilled by displacement method and once a dry ear was achieved the patients underwent tympanoplasty with or without cortical mastoidectomy. Pre-operative assessment of status of ear before surgery (quiescent/inactive), ETF, type of hearing loss (conductive/mixed/SNHL) were done and recorded. Risk categories were derived from the

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MERI scoring chart given below and the severity of the disease was noted.

Detailed history, clinical and otomicroscopic examination were carried out after taking informed written consent of patients. X-ray of both mastoids in Schuller's view in all patients were done.

Pre-operative pure tone audiometry was carried out in 1 week or less before surgery on OPD basis. It was performed in acoustically treated room with advanced digital audiometer, "Elkon eda 3 n 3 multi". Technique followed was Carhart and Jerger's technique, which is commonly used (technique of 5-up and 10-down method). The hearing was tested at frequencies 250Hz - 8000Hz, for each ear separately. The air conduction threshold and bone conduction threshold averages were calculated by taking the averages of 0.5, 1, 2 and 4 KHz frequencies. The air bone gap (ABG) was calculated taking the differences between air conduction and bone conduction threshold. Pre-operative Eustachian tube function was assessed by two ways:

- (a) Instillation of antibiotic ear drop
  - (b) ET functions by impedance audiometry
- **Assessment of eustachian tube function in intact drum (William's test)**
    1. Done in patients with intact ear drum.
    2. Measure middle ear pressure at the start of test (resting pressure), after patient swallows (with nose and mouth closed), and finally after performing valsalva.
    3. Pressure should become negative on swallowing and positive on valsalva.
    4. Normal ambient middle ear pressure is slightly negative.
    5. If middle ear pressure becomes negative on swallowing but does not become positive on valsalva or vice versa partially impaired and does not change at all on these maneuver grossly impaired.<sup>4</sup>
  - **Assessment of eustachian tube function in perforated drum (Toynbee's test)**
    1. Done in patients of perforated ear drum.
    2. The impedance audiometer is programmed to artificially increase or decrease the air pressure at the middle ear and then record the change of air pressure in the middle ear each time when the patient swallows.
    3. The patient is asked to swallow repeatedly and recorded graphically by impedance audiometer.

4. Change of pressure during swallowing is recorded as step ladder type of graph, that is, normal.
5. If some residual pressure persists even after five swallows, the tubal function is considered to be partially impaired and if cannot be neutralized at all by repeated swallowing, then the ETF is considered to be grossly impaired.<sup>4</sup>

After obtaining the pre anesthetic fitness and consent for surgery, tympanoplasty/cortical mastoidectomy with tympanoplasty was performed under general anesthesia in every patient. In all cases ossiculoplasty was performed in one stage using post aural, endaural or endomeatal approach. Temporalis fascia was used as the graft material for tympanic membrane reconstruction with underlay technique.

We have used conchal cartilage, tragal cartilage or thick homologous septal spur cartilage near maxillary crest for reconstruction of ossicular chain after sculpturing them appropriately. Conchal cartilage was harvested with perichondrium preserved on both side. Tragal cartilage was harvested with perichondrium on one side from tragus by putting separate incision on medial surface of tragus. Homologous thick septal cartilage was harvested during septoplasty from near the maxillary crest which was then preserved in 70% ethyl alcohol.

Patients were followed-up postoperatively on 7th day for stitch removal and after 3 weeks, 2, 3 and 6 months for assessment of graft take-up. Post-operative pure tone audiometric thresholds were recorded on 12th week. The functional results were evaluated according to the guidelines of committee on hearing and equilibrium of American Academy of Otolaryngology Head & Neck Surgery (AAOHN) except for 3 KHz which was substituted in all cases with threshold at 4 KHz. Pure Tone Average was calculated as the mean of 0.5, 1, 2, and 4 KHz. Post-operative Mean airbone gap (ABG) was calculated from air Conduction (AC) and bone conduction (BC) thresholds in each patient. Postoperative ABG closure was calculated by taking the difference between the average preoperative ABG and postoperative ABG.

#### OBSERVATION & DISCUSSION

In present study, 67 patients were included. There were total 23 males & 44 females. 27 patients had bilateral perforation & 40 patients had unilateral perforation, in which 36 patients were operated on left side and 30 patients were operated on right side. In all 67 patients, 59 patients had complain of ear discharge from affected ear, 49 patients had complain of earache, 44 patients had complain of decreased hearing & 4 patients had complain of tinnitus. No patients had complain of giddiness, facial deviation.

**Table I Middle Ear Risk Index<sup>6</sup>**

Risk factors	Value assigned score
1. Otorrhea(Belluci classification)	
a. Dry	0
b. Occasionally wet	1
c. Persistently wet	2
d. Wet, cleft palate	3
2. Perforation	
None	0
Present	1
3. Cholesteatoma	
None	0
Present	1
4. Ossicular status	
(Austin classification) <sup>5</sup>	
a. M + I + S+	0
b. M + S+	1
c. M + S-	2
d. M -S+	3
e. M -S-	4
f. Ossicular head fixation	2
g. Stapes fixation	3
5. Middle ear granulations or effusion	
No	0
Yes	2
6. Previous surgery	
None	0
Staged	1
Revision	2

MERI 0 normal, MERI 1-3 mild disease, MERI 4-6 moderate disease, MERI 7-12 severe disease

**Table II Distribution of patients according age groups (in years)**

Age group	No of patients
11-20	28(41.79%)
21-30	14(20.89%)
31-40	17(25.37%)
41-50	6(8.95%)
51-60	1(1.5%)
61-70	1(1.5%)

**Table III Distribution of Patients according to MERI score, ETF & graft take up**

MERI score	No of patients	Normal ETF	Poor ETF	Graft take up
1-3	38(56.71%)	29	9	35(92%)
4-6	27(40.29%)	9	18	24(88%)
7-12	2(2.98%)	1	1	2(100%)

On otoscopic examination, 29 patients had large central perforation, 33 patients had moderate central perforation, 4 patients had small central perforation, 1 patient had two small central perforations.

According to Belluci classification, on basis of perforation, presence of granulations, erosion of ossicles & type of surgery, all patients were given MERI score. According to MERI score, between 1 – 3, there were 38 patients, between 4 – 6, there were 25 patients & between 7- 12, there were 4 patients. In 67 patients, total 40 patients had normal Eustachian tube function(ETF) and 28 patients had poor ETF.

Among 67 patients, in 16 patients mastoid were pneumatized & in rest 51 patients they were sclerosed.

Among 67 patients, total 51 patients underwent cortical mastoidectomy and tympanoplasty and 16 patients underwent only tympanoplasty. In total 67 patients, 24 patients underwent cortical mastoidectomy type III tympanoplasty, 27 patients underwent cortical mastoidectomy type I tympanoplasty & 16 patients underwent only tympanoplasty without cortical mastoidectomy. In tympanoplasty, in 5 patients it was done by endomeatal route, in 2 patients by endaural route and in rest patients by post aural route. In type III tympanoplasty, tragal cartilage was used in 11 patients, conchal cartilage was in 3 patients, nasal septal spur cartilage was used in 9 patients & remodeled incus were used in 2 patients.

**Table IV Distribution of patients according to type of surgery**

Type I tympanoplasty	Cortical mastoidectomy + type I tympanoplasty	Cortical mastoidectomy + type III tympanoplasty
16	27	24

In all patients post-operative PTA was done after 12 weeks. In 67 patients, pre-operative ABG was  $37.97 \pm 11.08$  dB, post-operative ABG was  $24.79 \pm 12.89$  dB and hearing result was  $13.19 \pm 11.08$  dB. In type I tympanoplasty with cortical mastoidectomy pre-operative ABG was  $39.89 \pm 9.747$  dB & post-operative ABG was  $20.3 \pm 8.054$  dB. Hearing result was  $19.62 \pm 10.73$  dB. In type III tympanoplasty with cortical mastoidectomy, pre-operative ABG was  $40.98 \pm 9.65$  dB and post operative ABG was 35.29. Hearing result was  $5.69 \pm 10.69$  dB. In tympanoplasty patients, preoperative ABG was  $30.24 \pm 12.14$  dB and post operative ABG was  $16.64 \pm 8.78$  dB. Hearing result was  $13.59 \pm 8.14$  dB. In total 67 patients there were post-operative defect in graft in 6 patients in which, 5 patients have poor ETF & 1 patient have normal ETF.

**Table V Comparison of hearing results in relation to type of surgery**

	Type I tympanoplasty	Cortical mastoidectomy type I tympanoplasty	Cortical mastoidectomy type III tympanoplasty
Pre op ABG(dB)	30.24±12.14	39.89±9.747	40.89±9.65
Post op ABG(dB)	16.64±8.78	20.38±.054	35.29±12.97
Hearing result(dB)	13.59±8.14	19.62±10.73	5.69±10.69

Patients with MERI score between 0-3, preoperative ABG was 36.49±11.80 dB, post operative ABG was 18.53±8.69 dB & hearing gain was 17.97±10.53 dB. Patients with MERI score between 4-6, preoperative ABG was 40.6±9.75 dB, post operative ABG was 31.78±13.63 dB & hearing gain was 8.82±12.55 dB. Patients with MERI score between 7-12, preoperative ABG was 35.64±11.28 dB, post operative ABG was 40.63±0 dB & hearing gain was -4.99±0 dB.

**Table VI Comparison of hearing results in relation to MERI score**

MERI score	Pre operative ABG	Post operative ABG	Hearing result
0-3	36.49±11.80	18.53±8.69	17.97±10.53
4-6	40.6±9.75 dB	31.78±13.63	8.82±12.55
7-12	35.64±11.28	40.63±0	-4.99±0

Nishant et al.<sup>2</sup> conducted similar study, enrolled 50 patients in study. It was observed that maximum number of ears 36 (72%) fall under MERI 1–3 i.e. mild disease followed by 12(24%) ears with MERI score of 4–6 i.e. moderate disease and then by 2 (4%) ears with MERI score of 7–12 i.e. Severe disease. In this study, out of 50 patients who underwent tympanoplasty, graft was accepted in 40(80%) patients & rejected in 10(20%) patients, in which 6 patients had Eustachian tube dysfunction & 2 patients were having MERI score of 7–12 i.e. severe disease so there was 100% graft rejection in patients with MERI score 7-12. In our study, total graft was rejected in 6 patients in which 5 patients had Eustachian tube dysfunction but in our study there was 100% graft acceptance in patients with MERI score between 7-12.

Sharma A et al.<sup>7</sup> conducted study for correlation of MERI & hearing outcome after tympanoplasty. In this study, 50 patients were enrolled. In this study, most of the patients had mild MERI (64%), followed by severe MERI (20%) and then moderate MERI (16%). The mean preoperative PTA average was 44.34 dB (SD 8.01 dB) for patient with

mild MERI, 44.75 dB (SD 5.87 dB) for patient with moderate MERI, and 54.9 dB (SD 14.05 dB) for patient with severe MERI. Post operatively for mild MERI mean hearing gain is 12-14dB, for moderate MERI mean hearing gain is 10-13dB and for severe MERI mean hearing gain is 10-13dB. As compared to this study, 38(56.71%) patients had mild MERI, 27(40.29%) Patients had moderate MERI & 2(2.98%) patients had severe MERI. Patients with MERI score between 0-3, preoperative ABG was 36.49±11.80 dB, post operative ABG was 18.53±8.69 dB & hearing gain was 17.97±10.53 dB. Patients with MERI score between 4-6, preoperative ABG was 40.6±9.75 dB, post operative ABG was 31.78±13.63 dB & hearing gain was 8.82±12.55 dB. Patients with MERI score between 7-12, preoperative ABG was 35.64±11.28 dB, post operative ABG was 40.63±0 dB & hearing gain was -4.99±0 dB.

Kanagamuthu Priya et al.<sup>8</sup> conducted study for evaluation of ETF in CSOM with reference to its treatment outcome, in which total 100 patients were enrolled. They observed that patients with normal ETF showed graft uptake 100% and those with poor ETF showed graft uptake 76%. In our study total 39 patients with normal ETF, only in 1(2.56%) patient graft was rejected & out of 28 patients with poor ETF, graft was rejected in 5(17.85%) patients.

## CONCLUSION

Young and middle aged population of low socio-economic class are the most common sufferers of chronic suppurative otitis media. Tympanic membrane perforations are long standing and they are poorly treated (usually with ear drops only) by general practitioners in this group.

Mean pre-operative ABG in dry TM as per PTA is 37.97±11.08 dB. Hearing loss increases with increase in size of perforation. Patients with MERI score between 1-3 underwent tympanoplasty type I or cortical mastoidectomy with type I tympanoplasty. Patients with MERI score between 4-6 & 7-12 underwent cortical mastoidectomy type III tympanoplasty. Graft was rejected in total 6 patients out of 67 patients in which 5 patients had poor ET function & only 1 patient had normal ET function. It is concluded that there is good correlation between ET function & graft take up in tympanoplasty. In case of CSOM with totally impaired ETF patients, cortical mastoidectomy has been done to improve ventilation.

There is correlation between MERI score & hearing improvement after tympanoplasty. Patients with high MERI score underwent type III tympanoplasty having less hearing improvement compared to patients with low MERI

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score who underwent type I tympanoplasty. This study clearly shows that patients staged into MERI 1-3(mild disease) have graft acceptance rate of 92%, patients with MERI score 4-6 (moderate disease) have graft acceptance rate 88% & patients with MERI score 7-12 (severe disease) have graft acceptance rate 100% which is inconclusive.

According to other studies, in patients with MERI score between 7-12, there should be 100 % graft rejection but in our study there is 100 % graft acceptance without any defect in neo tympanic membrane. There are some factors which will affect this outcome like sample size is very small, patient's age, patients immunity, use of higher antibiotics, patient's follow up so this result is inconclusive yet it is to be observed that hearing outcome in these patients is less compared to patients with MERI score between 4-6.

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## ORIGINAL ARTICLE

### A Study of Etiology and Management of Post Appendectomy Right ILLIAC FOSSA Pain

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**KEYWORDS** : Appendectomy, right iliac fossa pain, acute appendicitis

#### ABSTRACT

**Introduction** : Appendectomy is one of the commonest abdominal operation performed during emergency hours for acute appendicitis. Acute appendicitis is essentially a clinical diagnosis supported by haematological and radiological investigation. But few patients continue to visit surgical OPD for continuous pain in right iliac fossa even post appendectomy. **Aims & objectives** : The aim was to evaluate the patients who continue to visit hospital even post appendectomy at Shardaben General Hospital affiliated with SMTNHLMM Ccollege, Ahmedabad, during the period from June 2016 to August 2018. **Materials & methods** : All patients presented with pain in right iliac fossa symptom was the criteria for selection of patients. These patients investigated to find out underlying organic cause. Functional patients were subjected for psychological counseling and evaluation. **Observation & Discussion**: In present study, we enrolled around 28 patients with complaints of pain in right iliac fossa even after appendectomy. 60% were female and 40% were male . 22 patient means 78%, were in the age group of 20 to 40 years may be due to maximum stress in life. 1 patient means 3.5% diagnosed with stump appendicitis which was confirmed radiologically. Patient was offered conservative management and responded well. In our study patient who underwent laparoscopy has better outcome than open surgery. **Conclusions** : Patients who are coming with recurrent pain in right iliac fossa after appendectomy, should not be neglected and should be thoroughly investigated.. We can prevent further complications if patient is treated in time.

#### INTRODUCTION

Appendectomy is one of the commonest abdominal operations performed during emergency hours for acute appendicitis<sup>(1)</sup>. Acute appendicitis is essentially a clinical diagnosis supported by hematological and radiological investigation. The diagnosis of appendicitis can be difficult, occasionally testing the diagnostic skills of even for the most experienced surgeon<sup>(2)</sup>. Equivocal cases usually require inpatient observation. This delay in diagnosis may increase morbidity and costs. Attempts to increase the diagnostic accuracy in acute appendicitis have included computer aided diagnosis, imaging by ultrasonography, laparoscopy and even radioactive isotope imaging<sup>(3)</sup>. If untreated can progress to appendicular perforation & peritonitis. Hence treatment of choice is appendectomy. Postoperative complications following appendectomy are relatively not uncommon and reflect the degree of peritonitis that was present at the time of operation, intra-operative spillage and intercurrent diseases that may predispose to complications<sup>(4)</sup>. Wound infection is the most common postoperative complication. Late complications include postoperative adhesive intestinal obstruction and right inguinal hernia. Pain in

right iliac fossa is the commonest presentation of acute appendicitis. But all patients are not relieved off their symptoms following surgery<sup>(5)</sup>. The large numbers of patients continue to visit surgical OPD for continuous pain in right iliac fossa even after appendectomy being performed<sup>(6)</sup>.

#### AIMS AND OBJECTIVES

The aims and objectives of this study were to confirm 1) whether wrongly diagnosed appendicitis or unnecessarily performed Appendectomy was real culprit of post appendectomy pain , 2) whether these symptoms are due to incomplete removal of appendix, 3) whether it is a complication of surgical procedure, 4) whether these patients really had and still have any organic disease or they are simple victims of psychosomatic pain and 5) to study delayed complications of appendectomy

#### MATERIALS AND METHODS

Present study was a retrospective and prospective observational study carried out at Shardaben General Hospital affiliated with SMT NHL MMC college, Ahmedabad , India from June 2016 to August 2018. The patients of both sex and of any age were studied and

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investigated to establish organic cause for pain in right iliac fossa after appendectomy. All those patients who on investigations did not show any organic causes were sent for psychological counselling and evaluation.

Exclusion criteria were:

- Pregnancy
- right iliac fossa mass
- previous history of pelvic inflammatory disease and urolithiasis.

The data collected included the patient's demographics, age and gender, the presenting symptoms.

### OBSERVATION AND RESULTS

This study included 28 cases who were operated for appendicitis, continue to visit hospital for pain in abdomen especially right iliac fossa for more than 4 weeks. Out of these patients 60% were female and 40% were male in a present study (table- 1).

**Table -1 : Gender distribution**

	Male	Female
No of patients (total =28)	11	17
Percentage (total =100%)	40%	60%

Out of 28 cases 22 patient means 78% were in the age group of 20 to 40 years (table -2).

**Table -2 : Age distribution**

Age group	No of patients (total no =28)	Percentage (%) (total -100%)
<10	1	3.5%
10-20	2	7.1%
20-30	15	53%
30-40	7	25%
40-50	1	3.5%
>50	1	3.5%

Out of total 28 patients 21 patients were operated during emergency hours and 7 patients were operated as elective cases (table -3).

**Table -3 : Emergencyvs elective surgery**

Sex	Emergency	Elective
Male	6	4
Female	15	3

In our study acute appendicitis on histopathology was seen in 23 cases (82%) but chronic was found in 4 cases (14%) .1 patient (3.5%) was found to have acute on chronic appendicitis (table-4).

**Table - 4 : Distribution of appendicitis according to histopathological report**

Types	Acute appendicitis	Chronic appendicitis	Acuteon Chronic appendicitis
No of patients	23	4	1
Percentage	82%	14%	3.5%

Of 28 patients studied, 19 patients (67%)had right McBurney's incision scar, 4 patients (14.2%) had right lower paramedian scar and 2 patients (7.1%) hadinfraumbilical midline scar. 3 patients (10%) underwent laparoscopic appendectomy (Table -5).

**Table- 5 : Distribution of incision for appendectomy**

Incisions	No of cases	Percentage
Mcburney's incision	19	67%
Right lower paramedian	4	14%
Infraumbilical midline	2	7.1%
Laparoscopic	3	10%

Etiological distribution of pain is showed in table -6 and further described as below.

Urinary complaint in the form of burning micturition was associated in 6 patients (21.4%). Out of these patients 4 patients had urinary tract infection as cause for their complaint and 2 patients had a right ureteric calculus in lower third.

4 patients (14.2%) underwent diagnostic laparoscopy for persistent pain in right iliac fossa there were adhesions inside at base of appendix and adhesiolysis was done.3 patients (10.7%) had mesenteric lymphadenitis diagnosed on Ultrasound All patients responded to antibiotics after treatment.

**Tablet -6 : Etiology wise distribution of patient**

Etiology	No of cases	Percentage
Burning micturition	6	21.4%
Adhesions	4	14.2%
Mesentric adenitis	3	10.7%
Ovarian cyst	2	7.1%
Stump appendicitis	1	3.5%
Intestinal obstruction	1	3.5%
Hypertrophic scar	2	7.1%
Right inguinal hernia	1	3.5%
Incisional hernia	3	10.7%
Ova in stool	1	3.5%
Functional	4	14.2%

2 female patients (7.1%) diagnosed with ovarian cyst on ultrasound .Both of the patients managed conservatively

1 patient (3.5%) was diagnosed with stump appendicitis



post appendectomy. Diagnosis was confirmed by radiological examination .Patient responded well to conservative management.

1 patient (3.5%) operated for acute appendicitis in emergency had intestinal obstruction which was managed conservatively .

Hypertrophic scar at Mcburney' s point was found in 2 patients. Both cases were treated conservatively.

Right indirect inguinal hernia was seen in 1 patient (3.5%) which was may be due to segmental nerve loss. Patient underwent surgical management later on.

Incisional hernia was seen in 3 patients (10.7%) after one six month of surgery.2 patients underwent meshplasty later on .1 patient did not give consent for surgery till date.

1 patient (3.5%) presented with mucoid stool. On stool examination stool for ova and cyst were present. Patient responded well to medical treatment

In 4 patients(14.2%) , 3 females and 1 male ,no cause was identified even after several investigations and treatment and pain was considered as functional pain. These patients were offered psychological counseling and were sent for psychological evaluation .

### DISCUSSION

In present study, even after appendectomy for acute or chronic appendicitis, few patients may present repeatedly for persistent pain in right iliac fossa that should not be neglected and subjected for thorough examination and investigations to treat it. In our study we found multiple treatable causes for pain .

In our study ,60% patients were female and 40% were male which correlated with the study conducted by YashvantR. Lamture and colleagues (7). Diagnostic accuracy for appendicitis is lower in female than male which was correlated with Piper et al study (8).The reason could be presence of gynecological cases.

Out of total 28 patients 22 patients (78%) were in age group of 20-40 years, the preponderance of patient in this is groups can be explained by the fact that this is the age group in which patient are subjected to maximum stress and strain of life. In Ingram et al study only 24% of young patients got relived of symptoms post appendectomy (9).Time interval between appendectomies and recurrent right iliac fossa pain was variable.

Post appendectomy pain was more commonly found in relation to acute appendicitis ( 82%) than chronic appendicitis (14%) on histopathological study.Patients of appendicitis may have associated urinary tract

pathologies which should not overlooked .In our study we found 6 patients (21%) had urinary complain in the form of burning micturition .The recognition of associated lesion preoperatively and its treatment can lead to decrease chances of negative appendectomy.

In our study 4 patients (14.2%) underwent adhesinolysis. Postoperative intestinal adhesions are the most common clinical entity causing recurrent pain after appendectomy or even after any pelvic surgery as perCuadra SA (10) .

In our study,1 patient (3.5%) was diagnosed with stump appendicitis. Incomplete removal of appendix results because of failure of surgeon to locate true appendicocaecal junction due to abnormally situated ileocecal fold and inflammatory process that conceal the proximal portion of the appendix(11).

In our study 2 patients (7.1%) had hypertrophic scar as a cause of pain which correlated with the study done by Yashvant R. Lamture and colleagues.

In our study , 3 patients (10.7%) had incisional hernia out of these patients 2 patients had hernia after midline lower abdominal incision and one at MC Burney's incision which correlated with study conducted by K Sarda and colleagues(12).1 patient (3.5%) had right indirect inguinal hernia which correlated withGue S study (13).

Laparoscopic appendectomy is having better results than open as in our study only 3 patients presented with postoperative pain after appendectomy as compared to open appendectomy. Laparoscopic removal of the appendix produces no added morbidity and associated with less postoperative co morbidity (14).In our study 4 out of 28 patients (14.2%) were found to have functional pain. But in study conducted by K Sarda and colleagues only 6.67% patients were found to have psychological pain in form of severe depression and anxiety disorder .This may be due to difference in the study sample.

### CONCLUSION

Patientswho are coming with recurrent pain in right iliac fossa after appendectomy, should not be neglected. Many of them may have organic cause for their symptoms. We could find in our study various reasons for persistent pain in right iliac fossa those after thorough evaluation were associated with some significant pathology that required definitive management. If patient is treated in time, we can prevent further future complications.

The patient with recurrent pain in right iliac fossa after appendectomies should be subjected to psychological evaluation if no organic cause is found. Laparoscopic appendectomy has better outcome than open appendectomy with less postoperative complications.

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## ORIGINAL ARTICLE

### A Comparative Study of Adding Intrathecal Magnesium Sulphate to Bupivacaine Hydrochloride in Spinal Anaesthesia .

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**KEYWORDS :** Magnesium Sulphate , Bupivacaine , Spinal anesthesia.

#### ABSTRACT

**Introduction :** Recently the use of intrathecal adjuvants has gained popularity as they improve the quality of spinal anesthesia. MgSO<sub>4</sub> mainly act as a non-competitive NMDA receptor antagonist by blocking ion channels and prolong the duration of spinal blockage. The present study is conducted to assess the effectiveness of adding magnesium sulphate intrathecally to bupivacaine in spinal anaesthesia.

**Material method :** 100 adult patients of both genders, ASA grade I and II were divided randomly in to 2 groups (n=50). IN GROUP C Inj. Bupivacaine Hydrochloride (15mg) 3ml + 1ml Normal Saline and In GROUP M Inj. Bupivacaine Hydrochloride (15mg) 3ml + 1ml (50mg) Magnesium sulphate was administered intrathecally. Hemodynamic changes, Duration of sensory & motor blockade with duration of spinal anesthesia were noted.

**Observation & result :** Mean Duration of sensory and motor blockade with duration of spinal anesthesia is statistically highly significant in Group M (p<0.0001) as compared to GROUP C. Adverse drug effects were also found to be significantly lower in GROUP M as compared to group C. No significant hemodynamic changes were observed on addition of MgSO<sub>4</sub> intrathecally.

**Conclusion :** Administration of intrathecal MgSO<sub>4</sub> to Bupivacaine significantly delays the onset of both sensory and motor blockade but also prolongs the period of spinal anesthesia without additional side effects.

#### INTRODUCTION

Regional Anaesthesia is a safe & inexpensive technique which is widely used for performing different surgical procedures. It reduces the risk of airway complication & avoids haemodynamic changes associated with laryngoscopy & intubation. Recently application of intrathecal adjuvants has gained popularity with aim of prolonging the duration of block, better success rate and patient satisfaction . Drugs like epinephrine, clonidine, ketamine, and neostigmine have also been used with opioids as an adjuvant to local anesthetic agents to prolong the duration of analgesia<sup>[1]</sup>.

However, significant higher side effects of opioids such as pruritus, respiratory depression, urinary retention, hemodynamic instability and occasionally severe nausea and vomiting have limited their use intrathecally.

Magnesium sulphate acts as a noncompetitive N-Methyl-D-aspartate (NMDA) receptor antagonist, blocking ion channels in a voltage dependent manner. The addition of

magnesium reduces the activation of C-fibers by inhibiting the slow excitatory postsynaptic currents which is produced by NMDA receptor activation. They also abolish hypersensitization by blocking NMDA receptor activation in the dorsal horn of spinal cord by excitatory amino acid transmitters like glutamate and aspartate. MgSO<sub>4</sub> administered intrathecally prolongs the duration of spinal opioid analgesia given during labour.

The aim of this prospective randomised control study was to evaluate the effects of intrathecal addition of magnesium to bupivacaine in patients undergoing lower abdominal and lower extremity surgeries.

#### MATERIALS AND METHODS

A randomised controlled study was conducted after taking institutional ethical committee approval and informed written consent from all 100 adults patients undergoing surgeries. The procedure was explained to the patient in details and patient was informed to communicate about the perception of any discomfort or pain during surgery.

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**Inclusion Criteria** : 1) Age group-18 to 65 years, of either sex. 2) ASA grade 1 and 2. 3) Elective lower limb surgery, lower abdominal surgery.

**Exclusion Criteria** : 1) Patients with hepatic, renal, cardiac or respiratory problems. 2) Patients with localised site infections. 3) Haematological, bleeding disorders and coagulopathies. 4) Long term opioid use. 5) Patients with history of chronic pain. 6) History of neuropathy, myopathy and neuromuscular diseases. 7) Known allergy to magnesium sulphate or other study drugs. 8) Patients refusal, uncooperative patients or children.

Patients were randomly placed in two different groups (50 in each group).

#### Group C :

Inj. Bupivacaine hydrochloride (15 mg) 3ml + 1ml NS (normal saline) was administered to 50 patients.

#### Group M :

Inj. Bupivacaine hydrochloride (15 mg) 3ml + 1 ml MgSO<sub>4</sub> (50 mg) was administered to the other 50 patients.

#### Technique :

First, Peripheral IV line was taken and each patient was preloaded with 15ml/ kg of Ringer's lactate fluid before procedure. Pulse oximeter, non-invasive blood pressure monitoring and ECG were attached and base line reading was taken.

Under all strict aseptic and antiseptic precautions, Lumbar puncture was performed at L2-L3 intervertebral space with 23G Quincke needle and selected drug was given slowly after free flow of clear CSF.

After completion of procedure, patient was immediately turned to supine position. No tilt of the table is allowed till 20 mins after the administration of the drug at which the level of the blockade was noted as the highest level of block was achieved. Sensory level blockade was tested by pin prick method and the quality of block was noted.

Pulse, SBP, DBP, MAP and SpO<sub>2</sub> and were recorded Preoperatively & every 5, 10, 15, 20, 25, 40, 55, 70, 85, 100 and 120 minutes after giving spinal anaesthesia and then every 20 minutes till the completion of surgery. The onset and duration of sensory blockade, time taken to reach the highest level of sensory blockade, time taken to achieve Bromage score 3, duration of sensory analgesia, time to complete motor block recovery and overall duration of spinal anaesthesia (post operative pain time onset) was recorded.

VAS scores were explained pre-operatively & were recorded before intrathecal injection & post operatively upto beyond 180 mins and analgesia in the form of Inj. Tramadol 1 mg/kg was given when VAS > 4 and the patient complained of pain.

Patients were watched for any intraoperative complications like bradycardia, hypotension, sedation, nausea, vomiting, dryness of mouth, pruritus and respiratory depression.

Master chart was prepared for all patients. Statistical analysis was prepared using Graphpad software and mean value was calculated for each parameter and P value < 0.05 was considered significant.

### RESULTS, FIGURES & TABLES

There were no significant difference between the two groups in age, sex, weight but highly significant in total duration of surgery (Table 1)

Mean Heart rate does not change much in both the groups and is found to be statistically insignificant ( $p > 0.05$ ) in maximum cases. (figure 1)

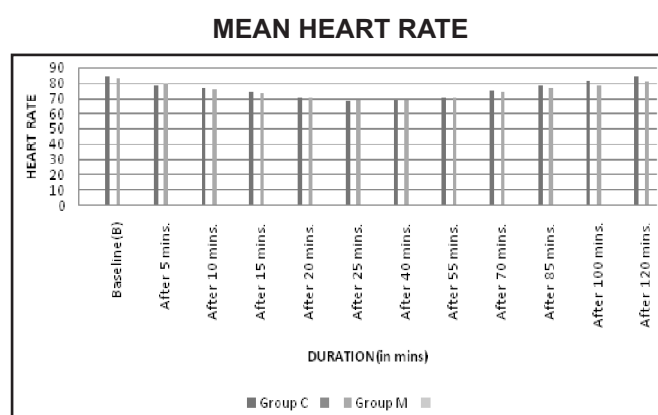
Mean Arterial Pressures statistically insignificant until about 40 -55 mins in both the groups after which the data becomes statistically significant indicating that magnesium sulphate plays a role in preventing the rise of MAP over the course of surgery which may be deleterious for the patient and may result in excessive bleeding. (figure 2)

Parameters in Post Operative period suggest that the addition of Magnesium sulphate intrathecally to bupivacaine plays a larger role in maintaining the stability of heart rate post operatively (i.e. after 120 mins) and the difference is statistically significant as compared to the control group. Similarly, the rise of Mean Arterial pressure post operatively is also prevented by the addition of MgSO<sub>4</sub> with the difference being statistically significant ( $p < 0.05$ ). (Table 2)

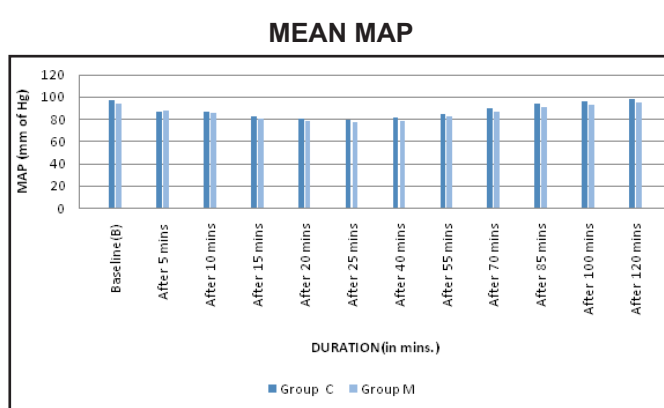
**Table 1: Demographic data for the two groups**  
**Characteristics of Spinal blockade**

Parameters	Group C	Group M	P value	RESULT
AGE(years)	47.04±10.57	45.4±11.14	0.45	NS
WEIGHT(Kg)	53.56±9.35	54.26±10.33	0.72	NS
SEX(M/F)	20/30	36/14		
DURATION OF SURGERY	71.04±30.6	96.72±33.73	0.0001	HSS

**Figure 1: Mean Heart rate in two groups**



**Figure 2 : Mean Arterial pressure in two groups**



**Table 2 : Post Operative Observations of Parameters**

Time	Parameters	Group C	Group M	P Value	Results
140 mins	HEART RATE	85.23±5.72	82.2±6.88	0.01	SS
	MAP	98.6±6.76	95.99±7.6	0.07	NS
160 mins	HEART RATE	86.65±5.43	84.4±5.98	0.05	SS
	MAP	99.96±5.87	96.76±6.98	0.01	SS
180 mins	HEART RATE	86.34±6.34	84.3±4.43	0.04	SS
	MAP	100.18±6.8	97.96±3.8	0.03	SS

#### Characteristics of Spinal blockade

##### 1). Time taken ( mins) to achieve the highest level of sensory blockade

GROUP C : 13.42 ± 1.56

Group M : 16.2 ± 1.51

P value : 0.0001

The median onset of sensory blockade to the maximum level of spread was slower in the magnesium group (16 min vs. 12 min, ) which is statistically significant. (P < 0.05)

##### 2). Time taken (mins) to achieve Bromage score 3 (Motor blockade)

GROUP C : 18.92 ± 2.34

Group M : 24.06 ± 3.87

P value : 0.0001

The time taken to achieve Bromage score 3 (motor blockade) was significantly delayed in Group M(24 mins) as compared to Group C(19 mins).

##### 3). Duration of sensory analgesia ( mins)

GROUP C : 240.86 ± 13.23

Group M : 317.24 ± 20.91

P value : 0.0001

The duration of sensory blockade was more in the group M(317 mins) as compared to the group C(240 mins) , which is statistically significant(P < 0.05)

##### 4). Duration of motor blockade ( mins)

GROUP C : 136.56 ± 3.99

Group M : 161.28 ± 13.47

P value : 0.0001

The mean duration of motor blockade was significantly prolonged on addition of MgSO<sub>4</sub>. (Median 136 mins vs 161 mins on addition of MgSO<sub>4</sub> , which is extremely statistically significant).

##### 5). Total Duration of spinal anesthesia( mins)

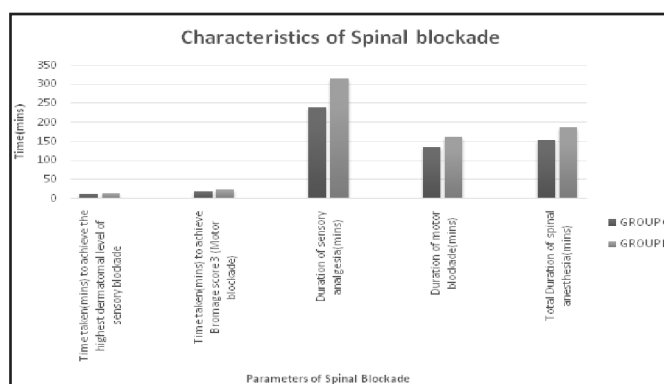
GROUP C : 153.4 ± 3.80

Group M : 187.96 ± 21.87

P value : 0.0001

The total duration of spinal anaesthesia was longer by around 8% in group M (median 187 min vs. 153min; P < 0.001), but there were no significant differences in mean pain scores at any time .

**Figure 3 : Characteristics of Spinal blockade**





**Table 3 : Adverse Drug Effects**

Complication	Group C (no. of Pt /percentage)	Group M (no. of Pt /percentage)
Nausea	6(12%)	4(8%)
Vomiting	3(6%)	2(3%)
Resp. depression	Nil	1(2%)
Bradycardia	3(6%)	4(8%)
Hypotension	4(8%)	5(10%)
Shivering	7(14%)	6(12%)
Itching	2(4%)	1(2%)

Adverse effects were comparatively lesser in the group M as compared to the group C. However, Respiratory depression was observed in 1 patient immediately post operatively which did not require active management as such and subsided on oxygen supplementation.

Incidence of hypotension (when MAP < 20% of the first recorded MAP) and bradycardia (when HR < 60/min) were also slightly higher in the group M which was managed by administration of intravenous fluids through a large bore cannula and as such no administration of vasopressors or inotropes was required.

### DISCUSSION

Subarachnoid block is commonly used anaesthetic technique for undergoing lower abdominal & lower limb surgeries which is safe, inexpensive and easiness to administer. Nowadays various additives are used to prolong the anaesthesia & analgesia given by this technique.

Magnesium is integral element to many of the body's basic functions and has an increasing role in the world of anaesthetics. Magnesium occurs naturally in spinal cord & blocks the NMDA glutamate channel mainly by its NMDA receptor antagonist action which plays an important role in the prevention of central sensitization of pain. Noxious stimulation leads to release of neurotransmitters such as glutamate & aspartate which bind to NMDA receptors and other excitatory amino acid receptors.[1] Magnesium blocks NMDA channels in voltage dependent manner leads to marked reduction in NMDA induced currents. Insufficient blood brain barrier penetration to achieve effective CSF concentrations limits the parenteral application of magnesium for anti-nociceptive modulation as NMDA receptor antagonist. Intrathecal magnesium potentiates opioid spinal analgesia and avoids the potential side effects of larger doses of IV magnesium that may be required to observe anti-nociceptive modulations in humans.

This study was conducted on 100 adult patients ranging from 18 to 65 years of age to test the addition of 50mg of

MgSO<sub>4</sub> to bupivacaine hydrochloride in spinal anaesthesia for lower abdominal and lower limb surgeries.

In our study, there are no statistically significant differences in terms of demographic properties or ASA gradings. it was found that the onset of both the sensory and motor blockade were delayed in the Magnesium M group as compared to the control C group. The time taken to reach the highest dermatomal level of sensory blockade was 16 mins in the M group (compared to 13mins in group C) whereas the motor blockade was achieved in 24 mins(compared to 19 mins in group C). Our results was similar with a study conducted by M. Ozalevli et al.[3] in Turkey, they observed that in patients undergoing lower extremity surgeries, the addition of MgSO<sub>4</sub> to spinal anaesthesia induced by bupivacaine hydrochloride and fentanyl significantly delayed both sensory and motor blockade but prolonged the period of anaesthesia without additional side effects<sup>[3][4][5]</sup>.

**Marzieh –Beigom et al<sup>[6]</sup>** also found in their study that onset of both sensory and motor blocks were prolonged in the magnesium group compared with the fentanyl and control group which is similar with our study.

It was found in our study that the duration of sensory analgesia was 240mins in group C as compared to 317mins in group M, which indicates significantly larger and prolonged analgesia in the magnesium group. This is also in correspondence with the study of **Maleeswaran et al<sup>[7]</sup>** who found that the addition of MgSO<sub>4</sub> 50mg to bupivacaine hydrochloride and fentanyl prolonged the onset and the duration of analgesia and reduced the analgesic requirements with minimal side effects.

In our study, the comparison of parameters indicating hemodynamic stability in the perioperative and post operative period were found to be statistically insignificant in both magnesium as well as the control group. In the perioperative period in M group decrease in MAP after 40 mins was found to be statistically significant indicating MgSO<sub>4</sub> plays a role in preventing the rise in MAP over the course of surgery, which may be deleterious for the patient and may result in excessive bleeding. **Ashraf E<sup>[9]</sup>** also found hemodynamic stability in the perioperative period in his study and a non significant number of patients in the magnesium group demonstrated a hypotensive episode requiring treatment.

We found in our study that the duration of anaesthesia was prolonged by magnesium sulphate to 187 minutes as compared to 153 minutes in the control group. Our results are consistent with the findings of **M.Ozalevli et al<sup>[3]</sup>** and **Buvanendran et al<sup>[8]</sup>**. **Ashraf et al<sup>[5]</sup>** compared Magnesium sulphate versus neostigmine as an additive



to bupivacaine hydrochloride in spinal anaesthesia and found statistically significant larger duration of analgesia in MgSO<sub>4</sub> group. These above findings are in correspondence with our study.<sup>[5][9]</sup>

Jaiswal<sup>[10]</sup> et al mentioned that magnesium sulphate significantly reduced the shivering threshold which is an incidental finding of our study as the drug not only exerts a central effect but also has a mild muscle relaxant effect. Neuraxial anaesthesia impairs thermoregulatory control. Consequently, addition of magnesium sulphate intrathecally to bupivacaine hydrochloride reduces the shivering threshold by a few tenths of a degree Celsius to act as an effective anti shivering agent.

### CONCLUSION

After further comparisons with previous works of different authors in the similar or nearly similar direction, in our study we were able to conclude that Administration of Intrathecal Magnesium sulphate to spinal anaesthesia induced by bupivacaine hydrochloride significantly delays the onset of both sensory and motor blockade but also prolongs the period of anaesthesia without additional side effects. So, magnesium sulphate is a cheap, easily available alternative which can be used as an additive to spinal anaesthesia induced by bupivacaine hydrochloride.

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## ORIGINAL ARTICLE

# Study of Hypothyroidism in Pregnancy and its Association to Development of Pre-Eclampsia

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**KEY WORDS :** hypothyroidism, pre-eclampsia, Pregnancy

### ABSTRACT

**AIMS:** To study association of development of pre-eclampsia in hypothyroid cases. To study outcome and infertility association in hypothyroid cases. **SUBJECTS AND METHODS :** It is an observational study of 87 antenatal hypothyroid patients. Association of hypothyroidism to infertility noted. Patients were followed for the development of pre-eclampsia and outcome. **RESULTS :** There is 13.79% development of pre-eclampsia in hypothyroid cases, more so in patients with S.TSH level  $>8\text{mIU/L}$ . Hypothyroidism is also associated with infertility. **CONCLUSION :** The Odd's Ratio for development of pre-eclampsia in hypothyroid cases with S.TSH level  $>8\text{mIU/L}$  is 1.94 showing positive correlation between hypothyroidism and development of pre-eclampsia.

### INTRODUCTION

Over the past twenty years there has been a major expansion of our knowledge regarding thyroid disorders associated with pregnancy. The impact of iodine deficiency on the mother and developing fetus and the adverse effects of maternal hypothyroidism on other aspects of maternal health and fetal mental status have been under evaluation for years<sup>(1)</sup>. Pregnancy may affect the course of thyroid disorder and conversely thyroid disorders may affect the course of pregnancy.

There is still a raging debate regarding the thyroid functional changes in pre-eclampsia. Alterations in thyroid gland function have been correlated with the severity of pre-eclampsia by some and totally rejected by others. Kumar et al showed that odds ratio corresponding to TSH levels  $>5\text{mIU/L}$  in the pre-eclampsia group compared to the normotensive controls was 4.85 and concluded that TSH is a strong associating factor for pre-eclampsia<sup>(2)</sup>. However, a report from Jordan in 2003 found no significant difference in the levels of serum FT4, FT3 and TSH in pre-eclamptic patients and various healthy controls in different gestational age subgroups<sup>(3)</sup>. Other reports found a significant correlation between hormones, especially elevated serum TSH and pre-eclampsia<sup>(4,5,6)</sup>. The most consistent finding from different studies is the link between biochemical hypothyroidism and pre-eclampsia.

A large Colorado study showed a continuous graded increase in serum cholesterol over a range of serum TSH values from  $<0.3$  to  $>60\text{mIU/L}$ <sup>(7)</sup>. It has been noted that mild thyroid failure can significantly increase systemic vascular resistance and impair cardiac systolic and diastolic function<sup>(8)</sup>. Subclinical hypothyroidism or mild thyroid failure was shown to be an independent risk factor for both myocardial infarction and radiologically visible aortic atherosclerosis in a Dutch study<sup>(9)</sup>. The finding of impaired flow-mediated endothelium dependent vasodilatation even in subjects with borderline hypothyroidism or high-normal serum TSH values<sup>(10)</sup> is of potential importance; with the postulation that serum TSH elevation may directly cause endothelial dysfunction which is a proposed core pathogenic mechanism in pre-eclampsia and eclampsia. Other evidence suggests that high levels of exposure to anti-angiogenic factors as in pre-eclampsia may be associated with increased risk for reduced thyroid function during after pregnancy<sup>(11,12,13)</sup>. The meta-analysis of the relevant studies and their references are shown in subsequent sections.

### AIMS AND OBJECTIVES

- 1) To study development of pre-eclampsia in patients with sub-clinical or overt hypothyroidism.

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- 2) To study association between known hypothyroid cases and infertility as well as history of 2 or more abortions
- 3) To study outcome in pre-eclamptic hypothyroid cases

### MATERIALS AND METHOD

My study is an observational single centre study. There is no control group.

This study is carried out in out-patient and in-patient Department of Obstetrics and Gynaecology, Civil Hospital, Ahmedabad.

The study spans over a period of 2 years starting from November 2015 to October 2017.

### SELECTION CRITERIA

#### INCLUSION CRITERIA :

- All Hypothyroid pregnant women and those with elevated S.TSH level in patients before 20 weeks of gestation.

#### EXCLUSION CRITERIA :

- All euthyroid pregnant women and those with hypertension before pregnancy or detected in first trimester.
- All pregnant patients with other medical disorders like Diabetes Mellitus, renal diseases.

In this study, I have taken the permission of the ethics committee and the Head of Department of Obstetrics and Gynaecology, civil hospital, Ahmedabad and have attended the patients coming to outpatient department of obstetrics and gynaecology, labour room, wards. The antenatal patients fulfilling the inclusion criteria were included in the study. Their baseline data like demographic details, clinical history, laboratory investigations are recorded in a predefined proforma. All the patients were followed up throughout pregnancy to see for development of preeclampsia and pregnancy outcome. The data of patients was recorded and analysed by using appropriate statistical tests.

#### Clinical parameters used for diagnosis of hypothyroidism and hypertension :

S.TSH value used for diagnosis of hypothyroidism was measured by ARCHITECT TSH machine(which is calibrated periodically) by Chemiluminescent Microparticle Immunoassay (CMIA). Blood pressure, urine albumin and pedal edema were used for diagnosis of gestational hypertension, pre-eclampsia.

#### Definitions :

Subclinical Hypothyroidism – Normal free T4 level with increased S.TSH level between 2.5 and 8mIU/L. Overt Hypothyroidism – Low free T4 Level with increased

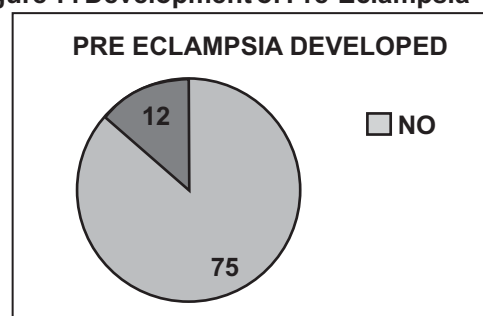
S.TSH level OR S.TSH >8mIU/L irrespective of free T4 level.

Gestational hypertension – BP >140/90mmHg without proteinuria detected first time during pregnancy after 20 weeks of pregnancy. Pre-eclampsia – BP >140/90 mmHg with proteinuria detected first time during pregnancy after 20 weeks of pregnancy.

### OBSERVATIONS AND DISCUSSION

Out of 87 hypothyroid patients of the study, association of development of pre-eclampsia and other outcome related observations are as follows :

**Figure 1 : Development of Pre-Eclampsia**



Out of 87 hypothyroid patients of the cohort, 12 ( 13.79%) developed pre-eclampsia during pregnancy.

**Table 1: Total number of patients distribution according to Subclinical and Overt hypothyroidism**

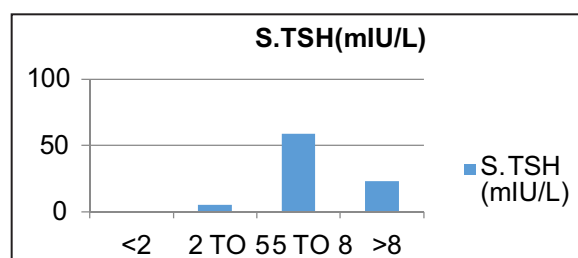
S.TSH level (mIU/L)	No. of total patients
2 TO 5	5(5.74%)
5 TO 8	59(67.81%)
>8	23(26.43%)

**Table 2: Strength of association between S.TSH level and development of Pre-eclampsia :**

S.TSH level (mIU/L)	PREECLAMPSIA PRESENT	PREECLAMPSIA ABSENT	TOTAL
>8	5	18	23
<8	8	56	64
	13	74	87

From the data as shown in the above table, the Odd's Ratio comes out to be 1.94 which is suggestive that the chances of development of pre-eclampsia in the hypothyroid patients with S.TSH level >8mIU/L is 1.94 times higher than the those with S.TSH level <8 mIU/L.

**Figure 2 :**

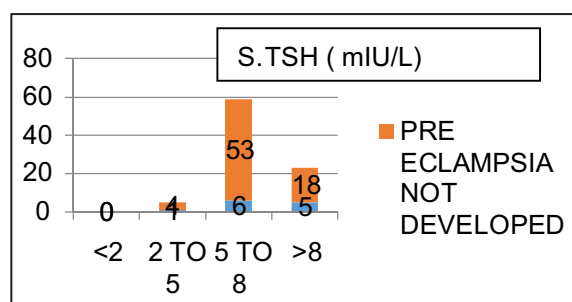


In this study, 73.56% patients had subclinical hypothyroidism and 26.44% patients had overt hypothyroidism.

**Table3: Association of Pre-eclampsia development in hypothyroid cases according to S.TSH level**

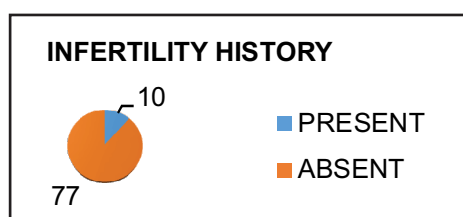
HYPOTHYROIDISM LEVEL (mIU/L)	PERCENTAGE OF PRE-ECLAMPSIA DEVELOPMENT
2 TO 5	20%
5 TO 8	10.16%
>8	21.73%

**Figure 3 :**



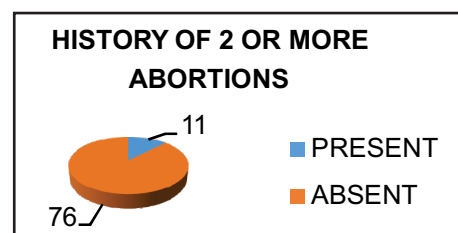
As shown in above table and figure, overall, overt hypothyroid patients are maximum in number in the cohort as compared to subclinical hypothyroidism. And as the S.TSH level increases, there are more chances to develop pre-eclampsia showing significant association between the level of S.TSH and development of pre-eclampsia during pregnancy.

**Figure 4: Association between known hypothyroid cases and history of infertility**



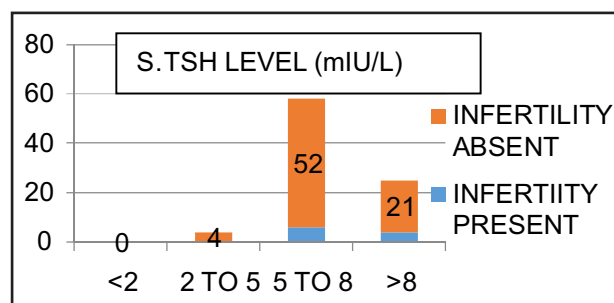
As shown in the above pie chart; out of 87 hypothyroid cases of the cohort, 10 patients had the previous history of infertility making 11.49%. This shows the association between high S.TSH level and infertility.

**Figure 5: Association between known hypothyroid cases and history of 2 or more abortions**



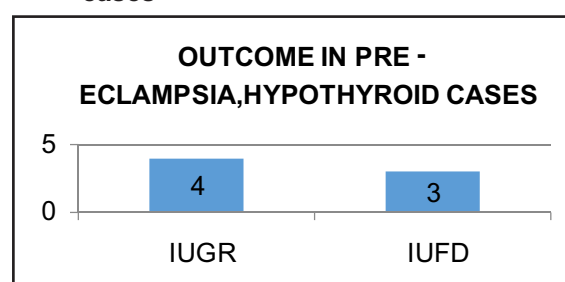
As shown in the above pie chart; out of 87 hypothyroid cases of the cohort, 11 patients had the previous history of recurrent abortions(2 or more in number) making 12.64%. This shows the association between high S.TSH level and bad obstetric history in the form of more numbers of abortions.

**Figure 6: Association between subclinical & overt hypothyroidism and infertility**



As shown in this bar-chart, the percentage of infertility in patients increases with higher serum levels of TSH. In this study there no cases of infertility in subclinical hypothyroid cases.

**Figure 7: Outcome in pre-eclamptic hypothyroid cases**



In my study, out of total 87cases and out of the cases having hypothyroidism with development of pre-eclampsia, in 4 cases the neonatal outcome was IUGR and in 3 cases the neonatal outcome was stillborn.

## CONCLUSION

- My study concludes that, there is 13.79% development of pre-eclampsia in known hypothyroid cases indicating significant association of hypothyroidism and pre-eclampsia.
- The Odd's Ratio for development of pre-eclampsia in hypothyroid cases with S.TSH level >8mIU/L is 1.94 showing positive correlation between hypothyroidism and development of pre-eclampsia. This study implies a further research in the linkage and causality between overt hypothyroidism and development of pre-eclampsia.
- The study shows more prevalence of patients with S.TSH level between 5 and 8 among all cases of hypothyroidism.
- The study also shows that development of pre-eclampsia is more prevalent in overt hypothyroid cases with S.TSH level >8 mIU/L.
- Hypothyroidism in pregnancy is also associated with history of infertility and recurrent abortion.

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## ORIGINAL ARTICLE

### A one year study (October 2016 To October 2017) of Leprosy Cases : Histopathology and Demonstration of Lepra Bacilli

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**KEYWORDS** : Leprosy, FF Stain

#### ABSTRACT

**Introduction** : The clinical manifestations of leprosy are too varied and diverse and can mimic variety of unrelated diseases. In patients of leprosy the treatment plan differs depending on histopathological subtype and bacillary load. This study aims to decide the incidence of various histopathological subtypes of leprosy with their histopathological subtyping & findings of modified FiteFaraco staining to demonstrate Lepra bacilli.

**Materials and Methods** : The present study was conducted at Department of Pathology, P.D.U Medical College, Rajkot, Gujarat, for the period of 1 years from October 2016 to October 2017. Skin biopsies from all patients clinically suspected as leprosy were studied to confirm the diagnosis, to classify histopathologically, and to know bacillary load by FiteFaraco staining. The histopathological features and FiteFaraco stain findings were then correlated.

**Results** : Out of 139 Biopsies from suspected cases of leprosy, 122 were confirmed as leprosy on histopathology. Peak incidence was in 21- 30 years of age group, while M: F ratio was 2.05:1. Maximum number [34.4%] of cases were of lepromatous leprosy (LL).

**Conclusion** : Leprosy is still prevalent in the region of study, Lepromatous Leprosy being the commonest. Proper histopathological diagnosis with subtyping and demonstration of lepra bacilli on tissue sections are very important in clinical management of all leprosy cases.

#### INTRODUCTION

- Leprosy is caused by *M. leprae* and predominantly affects the skin and peripheral nerves and results in disabling deformities. Leprosy or Hansen's disease, is a slowly progressive infection.
- Although in January 2006, leprosy has been eliminated as a public health problem in India (Prevalence rate < 1/10,000 population), it is still reported from all over country, with different prevalence in different states<sup>1</sup>.

#### AIM

- The present study is aimed to study the spectrum of various types of leprosy in the period of October 2016 to October 2017 at the Department of Pathology, P.D.U. Medical College, Rajkot and to study the histopathological patterns of various types of leprosy.

#### MATERIALS & METHODS

- The present study was conducted at Department of Pathology, P.D.U. Medical College, Rajkot, Gujarat over a period of 12 months from October 2016 to October 2017. Punch biopsies were taken from clinically diagnosed new skin lesion of leprosy patient and stained by Hematoxylin-Eosin (HE) and modified Fite Faraco stain.
- History and clinical examinations of patient regarding location of skin lesion, were recorded.
- If leprosy was confirmed on histopathological examination it was further subtyped as per Ridley and Jopling classification, into Lepromatous (LL), Borderline Lepromatous (BL), Midborderline (BB), Borderline Tuberculoid (BT) and Tuberculoid (TT) Leprosy.
- Cases of Histoid Leprosy (a subtype of Lepromatous Leprosy with classic morphology and highest

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bacillary load), Indeterminate Leprosy and Lepra reaction (Erythema Nodosum Leprosum) were also diagnosed.

### RESULT

- The present study included total of 139 clinically suspected cases of leprosy.
- The age of the patients varied from 7 years to 82 years with peak incidence (26.9%) in 21-30 years of age group.
- There was a male preponderance, the M: F ratio being, 2.05:1.
- On histopathological examination out of 139 cases, 122 cases were confirmed to be Leprosy, which were further subtyped.

**Table I. Distribution of cases of Leprosy on histopathological examination**

Type	No of Cases	Percentge
Tuberculoid Leprosy	23	18.8%
Borderline Tuberculoid Leprosy	22	18.0%
Midborderline Leprosy	01	0.8%
Borderline Lepromatous Leprosy	17	13.93%
Lepromatous Leprosy	42	34.4%
Indeterminate Leprosy	01	0.8%
Erythema Nodosum Leprosum	12	9.8%
Histoid Leprosy	04	3.2%

- Thus maximum number of cases 42 (34.4%) were of lepromatous leprosy, followed by 23(18.8%) cases of Tuberculoid leprosy.
- 4(3.2%)cases of Histoid variant of lepromatous leprosy, while 1(0.8%) cases each of Indeterminate leprosy and mid borderline leprosy, were also observed.

**Table II. Correlation of clinical and histopathological classification in leprosy cases**

Type	Clinically diagnosed cases	Histopathological Classification									Percentage of parity
		TT	BT	MB	BL	LL	IL	ENL	HL	No evidence of leprosy	
TT	15	12	01	00	00	00	00	00	00	02	80%
BT	26	06	17	00	01	01	00	00	00	00	69.2%
MB	04	00	02	01	01	00	00	00	00	00	25%
BL	23	03	01	00	13	01	00	00	00	05	56.5%
LL	55	02	01	00	02	40	00	00	00	10	72.7%
IL		-	-	-	-	-	01	-	-	-	-
ENL	12	00	00	00	00	00	00	12	00	00	100%
HL	04	00	00	00	00	00	00	00	04	00	100%
Total	139	23	22	01	17	42	01	12	04	17	87.7%

- In the present study, it was observed that the overall concordance between clinical and histopathological classification was 87.7%.
- Maximum concordance was seen in the in HL and ENL (100%), followed by TT (80%), LL(72.7%),BT(69.2%) and BL (56.5%). It was least in MB (25%).

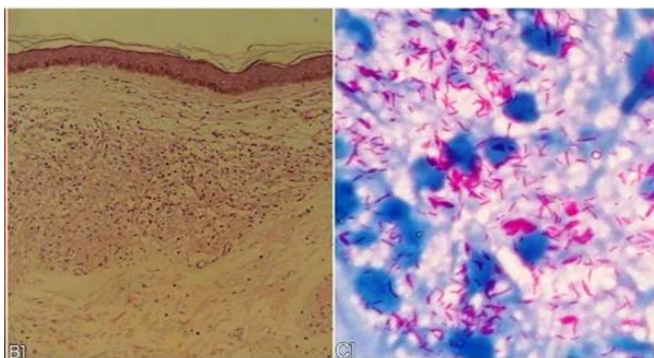
**Table III. Percentage distribution of Fite Faraco Stain positivity among various types of leprosy**

Type	No of cases	No of positive cases	Percentage
TT	15	00	00%
BT	22	01	4.54%
MB	01	00	00%
BL	17	16	94.11%
LL	42	40	95.23%
IL	01	01	100%
ENL	12	11	91.6%
HL	04	04	100%
<b>TOTAL</b>	<b>122</b>	<b>73</b>	<b>59.83%</b>

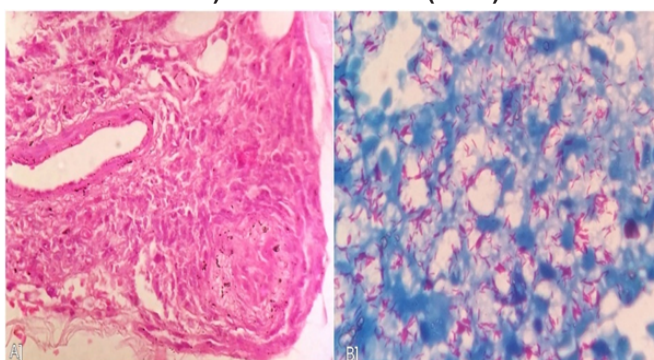
Out of 122 histopathologically confirmed Leprosy cases, 73 cases(59.83%) were F.F stain Positive.

- All cases of HL & IL and most of the cases of LL, BL and ENL showed presence of FiteFaraco stain positive lepra bacilli. The Bacillary index was high (+5 or +6). Few cases of BT also showed F.F. positivity with low bacillary index ranging from +1 to +4.
- None of the case of TT Leprosy showed F.F. positivity.

**Image-I Lepromatous leprosy (B) 10X (C) FiteFaraco stain(BI =6)**



**Image-II Borderline lepromatous leprosy; A) 10X B)FiteFaraco stain(BI=4)**



## DISCUSSION

- Leprosy still continues to be prevalent in all parts of India including Gujarat. Accurate diagnosis is of fundamental importance in all aspects of leprosy including epidemiology, management and prevention of disability.

- The attitude of society, methods of case detection, type of personnel carrying out survey, method and frequency of examination, the criteria adopted for diagnosis and type of classification of disease, are some variables that affect the description of the condition<sup>3</sup>.

**Table IV. Comparison of spectrum of leprosy by various authors with present study**

Type	Present study Rajkot (2017)	Tiwari et al <sup>5</sup> New Delhi (2015)	Kumar et al <sup>3</sup> Chandigarh (2014)	Nadia et al <sup>6</sup> Dehradun (2015)
TT	18.8%	7.5%	18.9%	14.4%
BT	18.0%	41.5%	9.4%	34.7%
MB	0.8%	0	0	0
BB	13.93%	5.7%	25.0%	16.1%
BL	13.93%	15.0%	7.0%	5.9%
LL	34.4 %	3.8%	9.9%	21.1%
IL	0.8%	26.4%	8.0%	4.2%
ENL	9.8%	0	17.9%	0
HL	3.2%	0	3.5%	3.4%
<b>TOTAL</b>	<b>122</b>	<b>53</b>	<b>423</b>	<b>118</b>

- The male preponderance observed in present study (2.05:1) is comparable to other studies<sup>4,5,6,7</sup> which reported M: F ratio ranging from 2.1:1 to 1.4:1.
- In the present study most common type of leprosy was the lepromatous leprosy (26.3%) followed by tuberculoid leprosy (18.8%) while in other studies

TT or BT were commoner<sup>4, 6, 7</sup> this might be due to higher prevalence rate of leprosy (0.98/10000) in Gujarat as compared to states of other studies with lower prevalence rate, as number of infective cases (LL) are more common in Gujarat state including the region of present study.

- In the present study overall clinicohistopathological correlation was found in 87.7% of cases, while in other studies, which ranged from 80.4% to 60.2%.<sup>2,3,7</sup>
- Out of 122 patients, which were diagnosed by histopathological examination into different forms of leprosy, Modified FiteFaraco stain positivity was seen in 59.83% cases was somewhat higher than other studies of Manandhar et al<sup>8</sup> and Tiwari et al<sup>6</sup>. This might be due to more cases of LL in present study. Two cases of LL are negative for FiteFaraco stain, which might be due to some technical errors.
- The findings of present study showing peak incidence at 21 – 30 years of age group, is comparable to that of Kumar et al while Mathur et al<sup>5</sup> (Gwalior) reported peak incidence in somewhat later age group.
- Increased number of cases in older age group and decreased cases in children indicates decreasing incidence of leprosy.

### CONCLUSION

- Though Leprosy is eliminated as a public health problem in India in 2006, cases are still reported from all part of country, with somewhat higher incidence rate in Gujarat.
- Cases of lepromatous leprosy are commoner in the region of present study as compared to other regions.
- For proper management and control of further transmission of disease, early diagnosis, correct histopathological subtyping and correlation with bacillary index is of utmost importance.

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## ORIGINAL ARTICLE

### Serum Uric Acid In Acute Ischaemic Cerebrovascular Stroke

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**KEY WORDS :** Uric acid, acute ischaemic cerebrovascular stroke, NIHSS Score

#### ABSTRACT

**Background :** There is evidence that high uric acid is a poor prognostic factor in patients with acute ischaemic cerebrovascular stroke. Our study showed a close correlation of serum uric acid and National Institutes Of Health Stroke Scale Score (NIHSS score) in patients of acute ischaemic cerebrovascular stroke.

**Material and Methods :** 50 indoor cases of acute ischemic cerebrovascular accidents were studied. All patients underwent serum Uric acid determination and the NIHSS score of all the patients at admission were calculated.

**Results :** Most patients with a better prognosis as determined by their lower NIHSS score had a lower serum uric acid level, and most with a worse prognosis as per their higher NIHSS score and a higher serum uric acid level.

**Conclusion :** Higher level of serum uric acid is associated with a poorer short term prognosis. Thus, it may act as an indicator of short term prognosis in acute ischaemic cerebrovascular stroke.

#### INTRODUCTION <sup>1-23</sup>

Hypertension remains the most common cause of stroke, and there is increasing evidence that an elevation in uric acid may cause primary hypertension. Elevated serum uric acid is an independent predictor of hypertension and is present in the vast majority of adolescents with new onset, untreated primary hypertension. Experimentally induced hyperuricemia also causes hypertension in rats by a renal mechanism linked to inhibition of Nitric Oxide, activation at the renin -angiotensin system, and development of renal arteriosclerosis. Once the renal arteriosclerosis develops the kidney drives the hypertension. Prolonged hyperuricaemia in rats also causes progressive renal injury via a crystalline independent mechanism and can accelerate established renal disease; the mechanism is medical by an elevation in glomerular pressure and renal vasoconstriction.

Finally, uric acid stimulates synthesis of monocyte chemoattractant protein – 1 by rat vascular smooth muscle cells, which is known to have a key role in simulating macrophage infiltration in atherosclerotic vessels.

There is a potential pathogenesis mechanism to explain why an elevated serum uric acid at the time of stroke may be injurious. Recent evidence suggests that acute ischemic stroke results in generation of local oxidants that

augment local injury and increase infarct size. Acute stroke is associated with a rapid decrease in serum anti-oxidants that recover slowly over the subsequent week. Individuals with lower plasma antioxidants at the time of acute stroke have a poorer outcome. Uric acid is often considered an anti-oxidant and has been shown to scavenge hydrogen-peroxide and hydrogen radicals, to blow nitro-tyrosine formation from paroxonyl-nitrite, and to preserve extracellular superoxide dismutase. Several studies suggest that its antioxidant properties may have beneficial role in multiple sclerosis, Parkinson's disease, and Alzheimer's disease. One might therefore expect that having elevated uric acid during an acute stroke would be beneficial. However, only one small study has reported that elevated uric acid is associated with good outcome after ischemic stroke, whereas two other studies, including the large series reported in 2498 subjects, found the opposite.

One explanation is that uric acid, being an aqueous antioxidant, can become a pro-oxidant under certain circumstances, particularly if other anti-oxidants such as ascorbate are low.

This might thus suggest that, high levels of uric acid may function more as pro-oxidant to increase the predisposition for the development of hypertension and vascular disease.

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Thus, there seems to be a correlation between serum uric acid level with the prognosis of acute ischemic stroke, as higher level is associated with a poorer prognosis in animal studies.

We did this study to note if there is any relationship between serum uric acid level and the NIHSS score in patients of acute ischaemic cerebrovascular stroke

### MATERIAL AND METHODS

In the present study, 50 indoor cases of ages more than 35 were studied who had acute ischemic cerebrovascular stroke within previous 72 hours as diagnosed by clinical examination and confirmed by either a CT Scan or by an MRI Scan.

Patients presenting with hemorrhagic stroke/ subarachnoid hemorrhage/ cerebral venous sinus thrombosis or presenting with ischemic stroke after 72 hours of onset were excluded. Also, Patients with other predisposing illnesses, other than classical risk factors for stroke (e.g. HT, DM, hyperlipidemia, IHD, previous TIA/ stroke) which may alter results of the study were excluded.

Detailed history of the patient included in the study was taken. They were asked in details about their symptoms, the onset, duration and progress of the same, as also associated other symptoms. They were specifically asked for symptoms of headache/ vomiting/ vertigo/ gait imbalance/ speech disturbances/ sensory symptoms/ visual complains among the other symptoms.

Past history regarding any illnesses was elicited. Especially history for risk factors for stroke, i.e. hypertension, diabetes, ischemic heart disease and previous TIA/stroke was asked as also about treatment of the same.

Complete CNS examination was done systematically along with examination of the other systems like respiratory, cardiovascular, gastrointestinal and musculoskeletal systems. After that, clinical diagnosis was made.

The NIHSS score of all the patients at admission were calculated.

All patients also underwent serum Uric acid determination. A serum uric acid level above 7mg/dL was considered as significant.

Patients also underwent the following investigations : Hb, TC, DC, Urine examination, RBS, FBS, PP2BS, S. Cholesterol, blood urea, serum creatinine, serum electrolytes, Liver function test, E.C.G., Fundus examination, C.T./ M.R.I. Scan examination, Lipid profile,

X-ray chest PA view, 2D- ECHO, USG- KUB in certain cases.

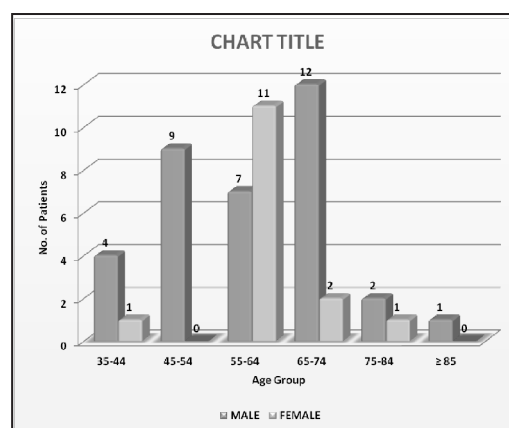
### RESULTS AND DATA ANALYSIS <sup>24-33</sup>

In the current study, most of the patients (36%) were belonging to the age group 55-64 years, followed by 28% in 65-74 years, 18% in 45-54 years, 10% in 35-44 years, 6% in 75-84 years and 2% aged  $\geq 85$  years. The youngest patient was 35 years old, and the oldest patient was 85 years old. The mean age of the patients was 59.4 years. In the present study 70% of the patients were males and 30% were females. Males are more frequently affected than females. In the present series, the ratio is 2.3 : 1 in favour of males, which confirms to that of other workers (Table I and Chart I).

**Table I: Age and Sex distribution in the study**

AGE GROUP	MALE No. of Patients	FEMALE No. of Patients	TOTAL
35-44	4	1	5
45-54	9	0	9
55-64	7	11	18
65-74	12	2	14
75-84	2	1	3
85	1	0	1
TOTAL	35	15	50

**Chart I : Age and Sex distribution in the study**



5 patients with NIHSS score more than or equal to 10 had their serum uric acid less than 7.0 mg/dl, while 33 patients had it at serum uric acid levels more than 7.0 mg/dl.

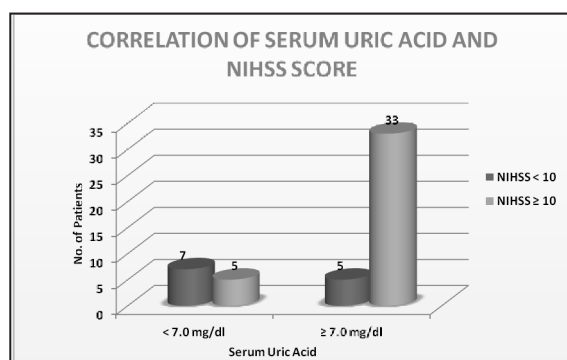
Likewise, 7 patients with NIHSS score less than 10 had their serum uric acid less than 7.0 mg/dl, while only 5 patients had it at serum uric acid levels more than 7.0 mg/dl (Table II and Chart II).



**Table II : Correlation of Serum Uric acid level and NIHSS score.**

Serum Uric Acid	NIHSS < 10	NIHSS ≥ 10
< 7.0 mg/dl	7	5
≥ 7.0 mg/dl	5	33

**Chart II : Correlation chart of Serum Uric acid level and NIHSSscore**



Thus, most patients with a better prognosis as determined by their lower NIHSS score had a lower serum uric acid level, and most with a worse prognosis as per their higher NIHSS score and a higher serum uric acid level.

The p value was < 0.01. Thus, there was a highly significant correlation between serum uric acid level and a better prognosis at the time of admission.

This correlates with most of the previous studies (Table III and IV).

**Table III: Mean Uric acid level in various other studies and current study.**

STUDY	No. of Patients	Mean Uric Acid
Karagianis	435	7.8
Seppo et al	1017	5.0
Milionis et al	163	5.5
Present Study	50	7.60

**Table IV: P values of various other studies and current study**

STUDY	P Value	Significance
Karagianis et al	= 0.001	Highly Significant
Seppo et al	= 0.001	Highly Significant
Milionis	< 0.0001	Highly Significant
Kurzepa	< 0.01	Highly Significant
John Kanellis	< 0.0001	Highly Significant
Present Study	< 0.01	Highly Significant

## CONCLUSION

Patients with a lower NIHSS score on admission, and thus a better prognosis, had lower levels of serum Uric Acid and those with a higher NIHSS score had higher Uric Acid levels.

P value < 0.01 (Highly Significant)

Our results thus indicate that higher levels of serum uric acid is associated with a poorer short term prognosis in patients of acute ischaemic cerebrovascular stroke

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## ORIGINAL ARTICLE

### Hysteroscopy for Abnormal Uterine Bleeding

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**KEY WORDS :** Hysteroscopy, Abnormal uterine bleeding, Menorrhagia

#### ABSTRACT

##### Introduction :

Abnormal Uterine Bleeding is one of the most common complaints of the women attending gynec OPD which requires proper endometrial cavity evaluation. Hysteroscopy has been shown to be highly accurate in diagnosing abnormalities of the endometrial cavity, tubal ostia, and endocervical canal. The aim of the study is to evaluate the feasibility of hysteroscopy in abnormal uterine bleeding and correlate the findings of hysteroscopy with histological findings. **Methods :** The present study "Hysteroscopy for Abnormal Uterine Bleeding" is a prospective study, carried out from July 2016 to February 2018 at our institute, V.S. General Hospital, Ahmedabad and 60 cases were taken up for the study. The results of hysteroscopy and endometrial histology were studied and analyzed.

**Results :** The most common complaint was menorrhagia (17 cases, 28.33%) followed by menometrorrhagia. Abnormal findings were seen in 46 patients (76.66%). The most common abnormality was hyperplasia of endometrium (31.66%). Out of 60 patients of our study who underwent Hysteroscopy and subsequent curettage, 96.66% histopathological findings correlating with hysteroscopy. **Conclusions :** Hysteroscopy is a safe, reliable and quick procedure to evaluate the endometrial cavity in patients presented with abnormal uterine bleeding. As Hysteroscopy provides direct visualization of cervix, uterine cavity and cornual openings, it is much better than dilatation and curettage.

#### INTRODUCTION

Introduction: Abnormal Uterine Bleeding is one of the most common complaints of the women attending gynec OPD which requires proper endometrial cavity evaluation.

Hysteroscopy is a minimally invasive procedure that has been shown to be highly accurate in diagnosing abnormalities of the endometrial cavity, tubal ostia, and endocervical canal<sup>1</sup>. As hysteroscopy allows direct visualization of uterine cavity and cervical canal without much aid and is safe procedure, will lead to more accurate diagnosis and specific surgical or medical treatment directed at the specific pathology and hence can be used as diagnostic procedure and will avoid the need for unnecessary major surgery.

Gimpelson and Rappold reported that hysteroscopy combined with guided biopsy was more accurate than dilatation and curettage, hysteroscopy is considered an accurate 'gold standard' in uterine cavity evaluation<sup>2</sup>.

Hysteroscopy involves inserting an optic endoscope into the endometrial cavity and cervical canal via vaginal route

and along with biopsy of endometrium serves as diagnostic procedure in AUB. We correlated the findings of hysteroscopy with histological findings and decided the mode of management according to the pathology detected.

#### AIMS AND OBJECTIVES

- (1) To study the accuracy of hysteroscopy in evaluation of abnormal uterine bleeding.
- (2) To correlate hysteroscopic findings with histopathologic findings.

##### Inclusion criteria :

Premenopausal and postmenopausal patient with chief complain of menstrual abnormalities.

##### Exclusion criteria :

- Suspected case of pregnancy
- Lower genital tract malignancies
- Pelvic inflammatory disease
- Medical contraindication to procedure (e.g. coagulopathy, etc. )

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## METHODS

The present study "Hysteroscopy for Abnormal Uterine Bleeding" is a prospective study, carried out from July 2016 to February 2018, at our institute, V.S. General Hospital, Ahmedabad. Necessary institutional approvals were taken before initiating the study.

During study period, we had taken randomly 60 patients of menstrual abnormalities from our gynaecology opd at V.S. General Hospital, Ahmedabad. We had taken detailed history of all these patients. All the patients in this study underwent hysteroscopy either diagnostic or in required cases operative hysteroscopy followed by curettage and the material was sent for histological examination.

Necessary routine investigation was done like Hb %, TLC, DLC, APC, blood sugar, urine – routine & micro, HIV, HbsAg, Transvaginal sonography, PAP smear and chest X-ray.

The results of hysteroscopy and endometrial histology were studied and analyzed. All patients were well informed about the study in all aspects and informed written consent was obtained.

For softening of cervix, we kept one Tablet Misoprostol (200 ug) per vaginally, 3 hour prior to procedure. A 4mm 30 degree hysteroscope with normal saline as the distension medium was used for all procedures and in case of myoma or polyp resection glycine was used with monopolar resectoscope. Hysteroscopy was performed under sterile conditions. In this study, hysteroscopy was performed under general anesthesia and taken specimen was sent for histopathological examination.

## RESULTS AND DISCUSSION

In this present study, panoramic hysteroscopy was performed in 60 patients using hysteroscope in patients who presented with complaint of abnormal uterine bleeding (AUB) followed by curettage. The curetted material was sent for histopathological analysis.

**Table : 1 Age Distribution**

Age Group	No of Patients	Percentage
20 – 29	08	13.33%
30 -39	21	35%
40 – 49	28	46.66%
50 – 59	03	5%
Total	60	100%

In the present study, maximum age incidence was between 40 to 49 i.e. 28 patients (46.66%). The youngest patient in the study was 25 years old and the eldest was 55 years old. Panda found that maximum incidence was

between 35-45 years in range between 25-70 years<sup>4</sup>. In Gianninoto's series, age range was 38- 80 years and commonest incidence was between 30- 45 years<sup>5</sup>.

**Table: 2 Relation To Parity**

Parity	Patients With Aub
Nulliparous	08
Primiparous	21
Multiparous	28
Grand Multiparous	03
Total	60

Out of 60 patients of AUB, 36 (60%) cases were multiparous.

**Table 3 : Duration of Abnormal Uterine Bleeding**

Duration	No of Patients	Percentage
< 6 Months	31	51.66%
6 months – 1 year	19	31.66%
>1 year	10	16.66%
Total	60	100%

Out of 60 patients of AUB, 31 patients (51.66%) had symptoms for less than 6 months.

The most common complaint in cases with AUB was menorrhagia (16 cases, 26.66%), followed by menometrorrhagia (10 cases, 16.66%). The least common complaints were polymenorrhoea and hypomenorrhoea. Menorrhagia as the primary indication for hysteroscopy was reported in 49.6% by Sciarra and Valle and 37.5% by Hamou while postmenopausal bleeding (43.7%) and abnormal perimenopausal uterine bleeding (56.3%) are the main indications in the study of Pasqualotto et al<sup>6,7,8</sup>.

Of all women with a normal sized uteri, majority presented with oligomenorrhea or hypomenorrhoea, while those having bigger uteri always presented with some pattern of increased bleeding.

**Table 4: Findings At Hysteroscopy And Histopathology**

Findings	No of Patients	Percentage
Hyperplastic	19 (31.66%)	19 (31.66%)
Polyp	14 (23.33%)	13 (21.66%)
Fibroid	9 (15%)	9 (15%)
Atrophic	4 (6.66%)	3 (5%)
Normal	14 (18.33%)	16 (26.66%)
Total	60(100%)	60(100%)

The most common abnormality in cases with AUB was hyperplasia of endometrium (31.66%), followed by endometrial polyps (23.33%). 9 cases showed submucous myomas (15%), 4 case of endometrial atrophy (6.66%).

**Table 5: Hysteroscopic Findings**

Hysteroscopic Findings					
Type of Complaint	Hyperplastic	Polyp	Fibroid	Atrophic	Normal
Menorrhagia	7	6	3	0	1
Metrorrhagia	5	1	2	1	1
Menometrorrhagia	3	3	2	0	2
Polymenorrhoea	1	1	2	0	2
Oligomenorrhoea	0	0	0	2	3
Polymenorrhagia	2	3	0	0	3
Hypomenorrhoea	1	0	0	1	2
Total	19	14	9	4	14

Hysteroscopy diagnosed all cases of endometrial hyperplasia and myomas with a specificity of 100%. In the present study, hysteroscopy made a false positive diagnosis of polyp in 1 case and of endometrial atrophy in one case.

Abnormal findings were seen in 46 patients (76.66%) with abnormal uterine bleeding out of 60 cases.

The most consistent finding has been the detection of endometrial hyperplasia and submucous myomas with high accuracy using hysteroscopy.

Swati Singh in 2014 conducted a study on patients of abnormal uterine bleeding with hysteroscopy and concluded that hysteroscopy has 100% accuracy in diagnosing normal endometrium, atrophic endometrium, tubercular endometrium and endometrial polyp with sensitivity of 97.56% and specificity of 79.66%<sup>10</sup>.

Study of Clark and Yela shown that hysteroscopy had high diagnostic accuracy for detection of intrauterine pathology<sup>11,12</sup>.

Out of 60 patients of our study who underwent Hysteroscopy and subsequent curettage, 58 patients had hysteroscopic findings correlate with histopathological findings.

**Table. 6 : Complications noted postoperatively**

Complications	No of patients	Percentage (%)
Vomiting	2	3.33
Bleeding	3	5.0
Pain	4	6.66
Infection	0	0.0
Perforation	0	0.0
Pulmonary oedema	0	0.0
Hyponetremia	0	0.0

Complications among patients noted post-operatively: Vomiting: 2 cases, Bleeding: 3 cases, pain: 4 cases, Infection: 0, Perforation: 0, Pulmonary oedema: 0,

Hyponetremia: 0. Minimal to no pain has proved to be a benefit of using a thin hysteroscope for diagnostic hysteroscopy. According to a study conducted in 2000 by Frank Willem Jansen et al the hysteroscopic procedure had a very low complication rate (0.13%)<sup>13</sup>.

There was no procedure related mortality in this study.

## CONCLUSIONS

Hysteroscopy is a safe, reliable and quick procedure to evaluate the endometrial cavity in patients presented with abnormal uterine bleeding as Hysteroscopy provides direct visualization of cervix, uterine cavity and cornual openings, it is much better than dilatation and curettage, which is blind procedure in diagnosing cervical and uterine pathology. Hysteroscopy can be used with minimal aids and with maximum patient compliance, less hospital stay and less complications with high diagnostic value. In case of normal trans vaginal sonographic findings, hysteroscopy can find subtle findings like small polyp, fibrosis, localized hyperplasia, small nodule. Hysteroscopy is diagnostic along with curative in treating pathology like polyp or submucous myomas etc. When combined with endometrial biopsy and pelvic ultrasonography, it can establish an accurate diagnosis in a majority of patients, thereby reducing the burden of hysterectomy. By demonstrating the intracavitary lesions to the patient in real time during hysteroscopy, this serves as an excellent educational tool for the patient and allows adequate counseling during the informed decision-making process.

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## ORIGINAL ARTICLE

### Noninvasive Blood Pressure Measurement In Newborn

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**KEYWORDS** : Blood Pressure, Non Invasive, Newborn

#### ABSTRACT

**INTRODUCTION** : Non invasive techniques estimate blood pressure by analysing changes in flow produced by compressing an artery in an extremity and monitoring an effect related to compression either by palpation or auscultation assessment or with some externally placed transducer.

**AIMS AND OBJECTIVES** : To study blood pressure measurement in neonates by indirect oscillometric method and pulse oximeter and to compare the both.

**MATERIALS AND METHODS** : This prospective study was conducted on 100 cases selected from L.G. Hospital. 50 neonates from NICU and 50 from postnatal wards were selected. Neonates requiring inotropes, crying neonates and congenital anomalies like CHD were excluded from the study. With an appropriate size cuff, blood pressure was recorded in neonates using indirect oscillometric method and pulse oximeter applied. Pressure was raised in 10mm increments every 5 seconds and the pressure at disappearance and reappearance of plethysmogram was noted and compared with blood pressure.

**RESULTS** : Mean systolic blood pressure in 50 sick and healthy term neonates by NIBP was 60.80 $\pm$ 11.68 and 69.74 $\pm$  8.55 mm of Hg respectively. Mean pressure of reappearance of BP in sick and healthy term neonates by pulse oximeter was 62.62 $\pm$  12.68 and 73.36 $\pm$  12.34 mm of Hg respectively. Blood pressure is affected by gestational age in weeks. It is lower in premature infants than full term infants.

**CONCLUSION** : Systolic BP correlated better with pulse oximeter BP recording taken at reappearance (RP) plethysmogram. This method of systolic blood pressure measurement is simple, non invasive, accurate and reliable.

#### INTRODUCTION

Blood pressure is an important parameter regularly monitored in critically ill neonates. The recognition and treatment of hypotension are particularly important to avoid complications such as cerebral ischemic injury or intraventricular haemorrhage. In neonates flush, palpation or auscultation methods were used initially. These methods are inaccurate, so are not used routinely now.

Noninvasive techniques estimate blood pressure by analysing changes in flow produced by compressing an artery in an extremity and monitoring an effect related to compression either by palpation or auscultation assessment or with some extremity placed transducer.

For more 20 years, Noninvasive blood pressure (NIBP) monitors have been widely used in intensive care units to closely monitor blood pressure (Systolic, Diastolic and mean arterial blood pressure) in patients of all ages from birth.

Blood pressure measurement by NIBP monitor by indirect oscillometric (Digital) method is non-invasive & accurate. In neonates by NIBP can not miss hypertension. NIBP monitor is useful for infants who require BP monitoring after discharge from the NICU e.g. neonates with Hypertension on anti-hypertensive treatment. By NIBP monitoring, patient's heart rate / Pulse rate are assessed simultaneously with Blood Pressure.

It was decided to study about blood pressure measurement by NIBP in NICU & normal neonates and these results were compared with the plethysmogram of pulse oximeter during slow inflation & deflation of cuff.

#### AIMS AND OBJECTIVES

1. To study blood pressure measurement in neonates by indirect oscillometric method (Digital method).
2. To study use of pulse oximeter to determine BP in neonates.
3. To study and establish reliability & accuracy in BP measurement by Indirect Oscillometric method by NIBP & compare with Pulse Oximeter.

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## MATERIALS AND METHODS

Total 100 cases were studied. These cases were selected from L.G. Hospital. This prospective study was performed from Nov'05 to Dec'05.

Criteria for selection of cases: 50-Neonates admitted in NICU. 50-Neonates from post-natal wards of L.G.Hospital were taken in study.

Blood pressure was recorded: 1) 50 sick neonates of Age (>24 hours), Different maturity, Different sex. 2) 50 Healthy neonates of Age (>24 hours), Full-Term, Different sex.

Criteria for exclusion of cases: Neonates on inotropic agents, crying neonates and with congenital anomalies like CHD were excluded from study.

Blood pressure was recorded in right arm. A blood pressure cuff of appropriate size. Instruments by indirect oscillometric [Digital] method. In NICU Systolic, Diastolic and mean blood pressure were taken once. In post-natal 3-reading of Systolic, diastolic and mean blood pressure were taken. So neonates admitted in NICU single observations were taken by each method. Neonates not admitted in NICU 3 observations were taken by NIBP and single observation by Pulse oximeter.

Pulse oximeter probe was applied to ipsilateral finger. After pulse oximeter displayed a smooth plethysmogram, oxygen saturation and heart rate pressure in cuff was slowly raised in increments of 10mm/5sec and changes in plethysmogram observed.

The pressure at disappearance & reappearance of plethysmogram was noted to get mean of disappearance and reappearance. These values are compared with blood pressure taken by indirect oscillometric (Digital) method.

### 1. For n=50

Admitted in NICU						
	NIBP			Pulse Oximeter		
	SBP (mm of Hg)	DBP (mm of Hg)	Mean (mm of Hg)	DP	RP	MDr
Mean	60.8	35.34	44.2	82.36	62.62	72.49
S.D.	11.68	10.73	10.91	15.69	12.68	13.51

### 2. For n=50

NOT Admitted in NICU						
	NIBP			Pulse Oximeter		
	SBP (mm of Hg)	DBP (mm of Hg)	Mean (mm of Hg)	DP	RP	MDr
Mean	69.74	42.1	51.8	93.06	73.36	83.21
S.D.	8.54713	7.27941	6.36316	12.9653	12.34	11.37545

### 3. For n=100

Admitted and Not admitted in NICU						
	NIBP			Pulse Oximeter		
	SBP (mm of Hg)	DBP (mm of Hg)	Mean (mm of Hg)	DP	RP	MDr
Mean	65.27	38.72	48	87.71	67.99	77.85
S.D.	11.13	9.73	9.67	15.3	13.57	13.54

## OBSERVATION AND DISCUSSIONS

- This prospective study was done in L.G. Hospital, total 100 cases were studied.
- 100 neonates of either sex Male = 48% Female = 53%. Age (1-28) days.
- Maturity (Full Term – 67%, Preterm – 33%).
- Healthy status (Sick-50%, Healthy-50%).
- Wt. [840gm-3.7kg] average wt. 2.258kg.
- Neonates admitted in NICU single observations were taken by each method. Neonates not admitted in NICU 3 observations were taken by NIBP and single observation by Pulse oximeter.
- Blood pressure was measured in 50 sick neonates in NICU.
- Mean systolic blood pressure by NIBP was 60.80+/-11.68 mm of hg. In Avdresh et al, Girish et al study: 73.92+/-13.60 mm of hg.
- Mean blood pressure by NIBP was 44.20+/-10.91 mm of hg.
- The mean pressure of Disappearance and reappearance (MDr) by Pulse Oximeter 72.49+/-13.51 mm of hg. In Avdresh et al, Girish et al study: 83.46+/-10.98 mm of hg.
- Blood pressure was measured in 50 healthy term infants not admitted in NICU.
- Mean blood pressure by NIBP was 51.80+/-06.36 mm of hg. In Park et al, Myungk et al study: 49.80+/-07.00 mm of hg
- The mean pressure of Disappearance and reappearance (MDr) by Pulse Oximeter 93.06+/-12.97 mm of hg. In Park et al, Myungk et al study: 95.12+/-11.56 mm of hg

- Mean Systolic Blood Pressure by NIBP was: 65.27 $\pm$ 11.13 mm of Hg. In Avadhesh et al, Girish et study: 73.92 $\pm$ 13.06 mm of Hg.
- Mean Diastolic Blood Pressure by NIBP was: 38.72 $\pm$  mm of Hg.
- Mean Blood Pressure by NIBP was: 48.00 $\pm$ 09.67 mm of Hg.
- The Mean Pressure of Point of Disappearance by pulse Oximeter was: 87.71 $\pm$ 15.30 mm of Hg. The Mean Pressure of Point Of reappearance by Pulse Oximeter was: 67.99 $\pm$ 13.57 mm of Hg. In Avdhesh et al, Girish et al Study: 71.88 $\pm$ 12.08.
- The Mean pressure of Disappearance & reappearance by Pulse Oximeter : 77.85 $\pm$ 13.54 mm of Hg. In Avdhesh et al, girish et al study: 83.46 $\pm$ 10.98 mm of Hg.
- Correlation coefficient of point of Reappearance with Systolic Blood pressure by NIBP: 0.89. In Avdhesh et al, Girish et al Study: 0.89.
- Mean Systolic Blood Pressure by NIBP better correlate with Pulse Oximeter BP reading taken of Reappearance of plethysmogram. Point of Disappearance and Mean of Disappearance & Reappearance also correlate with Systolic BP but on an average gives higher values.

#### 4. For n=33

Preterm			
Gestational week	NIBP		
	SBP (mm of Hg)	DBP (mm of Hg)	Mean (mm of Hg)
<24 Weeks	47-59	25-32	34 $\pm$ 6
24-28 Weeks	47-58	24-38	38 $\pm$ 6
29-32 Weeks	46-61	27-36	41 $\pm$ 6
>32 Weeks	52-62	30-39	46 $\pm$ 4

Blood pressure recorded in preterm from < 24 weeks to >32 weeks

1. <24 Weeks – Mean Blood pressure by NIBP: 34 $\pm$ 6 mm of Hg
2. 24-28 Weeks – Mean Blood Pressure by NIBP: 38 $\pm$ 6 mm of Hg
3. 28-32 Weeks – Mean Blood Pressure by NIBP: 41 $\pm$ 6 mm of Hg
4. 32 Weeks – Mean Blood Pressure by NIBP: 46 $\pm$ 4 mm of Hg

#### 5. n=16

Term Infants				
Days	NIBP			
		SBP	DBP	Mean
Day-2	Sleep	65 $\pm$ 9	38 $\pm$ 6	46 $\pm$ 4
Day-2	Awake	69 $\pm$ 7	39 $\pm$ 6	51 $\pm$ 6
Day-3	Sleep	69 $\pm$ 5	41 $\pm$ 6	52 $\pm$ 6
Day-3	Awake	71 $\pm$ 11	43 $\pm$ 8	53 $\pm$ 5
Day-6	Sleep	73 $\pm$ 5	48 $\pm$ 10	57 $\pm$ 9

Blood pressure was measured according to days of life with awake and sleeping infants.

Above study shows that

1. Systolic blood pressure and Diastolic blood pressure is increasing with increasing days of life in full term infants.
2. Mean arterial blood pressure increases in postnatal age by 1 to 2 mm of Hg during first week of life in full term infants.
3. Blood Pressure measured in awake (n=16) infants had B.P. values 4 to 5 mm of hg greater than quiet infants. (Myung k , Park et al)

#### 6. n=32

Low Birth Weight			
Weight	NIBP		
	SBP (mm of Hg)	DBP (mm of Hg)	Mean (mm of Hg)
751-1000	47-58	52-30	31 $\pm$ 3
1001-1250	48-59	27-38	37 $\pm$ 7
1251-1500	47-58	22-36	37 $\pm$ 4
1501-1750	48-60	24-36	39 $\pm$ 5
1751-2000	48-62	24-39	45 $\pm$ 6

Above study shows

1. Blood pressure is affected by birth weight. It is lower in LBW infants than in full term newborn [Emery & Greenough – 1992 , Hegi et al -1994] Nuntnarumit et al-1999
2. In this study blood pressure is lower in premature infants than full term infants.

### SUMMARY AND CONCLUSION

This prospective study was done at L.G. Hospital. Total 100 cases were studied. Noninvasive blood pressure monitors have been useful in intensive care units to monitor systolic, diastolic and mean arterial blood pressure simultaneously.

We can rapidly identify change in blood pressure in critically ill neonates.

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[Mean systolic blood pressure in 50 sick neonates by NIBP was 60.80 $\pm$ 11.68 mm of Hg. Mean blood pressure in 50 sick neonates by NIBP was 44.20 $\pm$ 10.91 mm of Hg.

Mean pressure of Reappearance in sick neonates by pulse oximeter was 62.62 $\pm$ 12.68 mm of Hg.

Mean SBP in 50 healthy term neonates by NIBP was 69.74 $\pm$ 08.55 mm of Hg.

Mean blood pressure in 50 healthy term neonates by NIBP was 51.80 $\pm$ 6.36 mm of Hg.

The mean pressure of Reappearance in 50 healthy term neonates by Pulse Oximeter was 73.36 $\pm$ 12.34 mm of Hg]

Blood pressure is affected by gestational age in weeks. It is lower in premature infants than full term infants.

Mean blood pressure by both the method ( NIBP&Pulse oximeter) was on lower side in case of sick neonate.

SBP and DBP is increasing with increasing days of life in full term infants. Mean arterial blood pressure increase in postnatal age by 1 to 2 mm of hg during first week of life in full term infants.

Systolic BP correlated better with pulse Oximeter blood pressure recording taken at reappearance of plethysmogram while deflating the BP cuff.

This method of systolic blood pressure measurement is simple, noninvasive, accurate and reliable. Hence, it is recommended for use in neonates when other reliable methods of BP recording are not available.

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## CASE REPORT

### Spindle cell Haemangioendothelioma, A rare Vascular Tumour with Presentation as Intraparenchymal Haemorrhage, A Case Report

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**KEYWORDS :** Hemangioendothelioma, rare vascular tumour

#### ABSTRACT

Spindle cell hemangioendothelioma is a rare vascular tumor featured by a histologic manifestation intermediate between benign hemangioma and malignant angiosarcoma. A 45 year old female patient presented with loss of consciousness and left sided weakness with CT brain suggestive of hematoma in right gangliocapsular region. A computed tomography angiography brain revealed asuspected aneurysm in right internal carotid artery in clinoid segment. Right pterional craniotomy was done with removal of vascular tumor along with hematoma which was adhered to right internal carotid artery and clinoid process. The histopathologic report was suggestive of spindle cell hemangioendothelioma of the brain. It is hoped that our report will contribute further understanding of the neuropathology and natural history of this unusual tumor.

#### INTRODUCTION

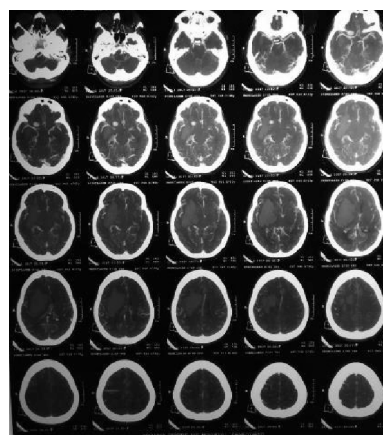
Intracranial spindle cell hemangioendothelioma (HE) is a rare borderline angiomatous tumor of vascular origin and histologically intermediate of hemangioma and angiosarcoma. HE involving intracranial structures occasionally results in serious local compressive symptoms, including cranial nerve palsy or a potentially fatal increase in intracranial pressure. Despite the low proliferation indices, the clinical course of intracranial HE can be complicated. A total resection is essential where possible, otherwise radiotherapy and/or chemotherapy are required. Pre-operative embolization of the feeding artery is recommended. As intracranial HE is seldom encountered in clinical practice, considerable confusion exists with regard to its correct diagnosis and management.

#### CASE REPORT

A 45 year old female patient with history of cardiac disease presented with loss of consciousness and left sided weakness. On examination, patient was comatose with GCS: eye opening on painful stimuli and withdrawal response with no verbal response and left sided hemiparesis. Patient was intubated and put on ventilator support. Pupils were equal in size with normal reacting. All laboratory tests were within normal limits. A computed tomography brain revealed hematoma in right gangliocapsular region. Computed tomographic

angiography (Figure 1-3) was done. Based on the findings of a homogeneously enhanced, well-defined lesion in right internal carotid artery in clinoid segment, a provisional diagnosis of right ICA aneurysm was made. Right pterional craniotomy with removal of vascular tumor and hematoma which was adhered to right internal carotid artery and clinoid process was done. Tumour was approximately 0.9\*0.9\*0.7 cm sized, reddish brown in colour and soft in consistency. The histopathologic report was suggestive of spindle cell hemangioendothelioma of the brain (Figure 4). Patient expired on third post-operative day due to preexisting cardiac condition. As patient expired on third post operative day, Immunohistochemistry was not done.

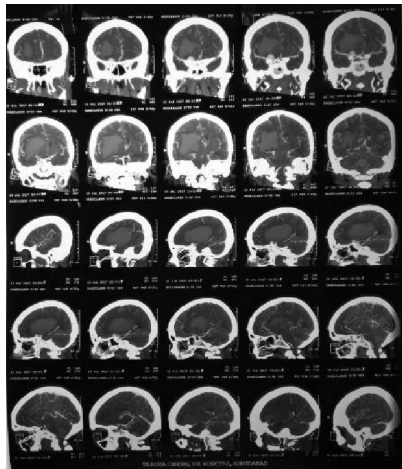
**Figure 1 : CT Angiography brain**



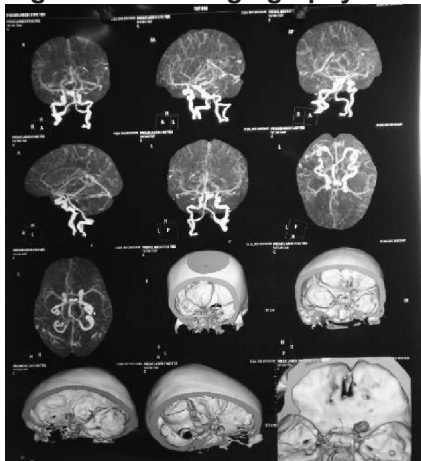
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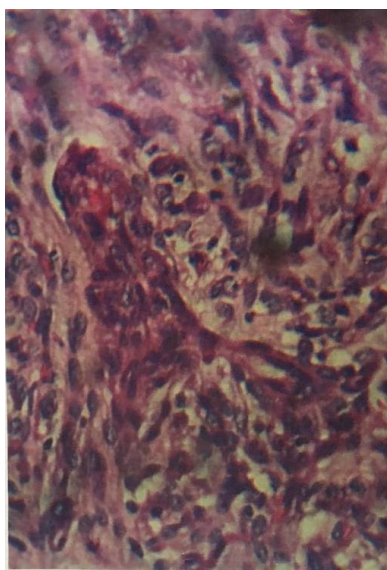
**Figure II: CT Angiography brain**



**Figure III : CT Angiography brain**



**Figure IV : Histopathologic examination**  
(Spindle cell hemangioendothelioma)



## DISCUSSION

Spindle cell hemangioendothelioma (SCH) is a rare vascular neoplasm that was described by Weiss and Enzinger.<sup>1</sup> Intracranial hemangioendothelioma accounts for <0.02% of all primary intracranial tumors, and it usually arises from brain, dura matter, spine and skull. It involves other organs as lungs, liver, head and neck, bones and vessels, so always look for sites other than cranium.<sup>2</sup> Various clinical, radiological and pathological features have been sporadically reported.<sup>2,3</sup> Spindle cell hemangioendothelioma was first described as a low-grade sarcoma with histologic features intermediate between hemangioma and Kaposi's sarcoma.<sup>4</sup> Overlapping of histological features of tumor makes it difficult to classify into any single category.<sup>5</sup> Distinct subtypes described are epithelioid hemangioendothelioma, spindle cell hemangioendothelioma, and malignant endothelial papillary angioendothelioma.

Intracranial HE are usually of epithelioid type.<sup>7</sup> Epithelioid hemangioendothelioma has been described in extradural intracranial locations but spindle cell hemangioendothelioma of the brain has been rarely reported.<sup>6</sup> Spindle cell hemangioendothelioma is typically described as being composed of two cellular components.<sup>6,7</sup> Vascular spaces lined by endothelial cells, had a tendency to digitate into the vascular lumens and separate cellular areas of spindle cells which are distinguished by the focal presence of rounded endothelial cells which form nests or line vascular channels. Both tumor cell types feature vacuolar changes in the cytoplasm of some cells. SCH is a benign vascular neoplasm or malformation with local recurrences; represents contiguous spread along vessels; rate is as high as 60%.<sup>8</sup>

HE can affect adults and children, with no clear gender preponderance; presents in the fourth and fifth decades. Clinical symptoms usually depend on location of tumor and related to raised intracranial pressure, but rarely they can present as hematoma.<sup>9,10</sup> The tumors often grew slowly with an indolent clinical course, thus the period from the onset of the first symptom to the time of diagnosis is relatively long.

On imaging, tumors appear hyperintense (and/or heterogeneous) on T2 and iso to hyperintense (and/or heterogeneous) on T1. It shows uniform contrast enhancement on both CT and MRI.<sup>3</sup>

Differential diagnosis for HE usually includes meningioma, hemangioma and angiosarcoma.<sup>12,13</sup> Hemangiomas are benign and show a honeycomb configuration and classic sunburst pattern, with a rapid enhancement at the early stage and homogeneous

enhancement after a delay.<sup>14</sup> Primary CNS angiosarcoma is an extremely rare malignancy, with rapid growth and rapid onset on neurological symptoms. Imaging studies show a well-demarcated lesion of the cerebral hemisphere with avid post contrast enhancement. However, by contrast to HE, angiosarcomas usually present as a heterogeneous mass with significant vasogenic edema and intratumoral cyst formation.<sup>15,16</sup>

The prognosis and treatment of hemangioendothelioma have not been well established. Essential of the treatment of SCH is total surgical resection whenever possible. Adjuvant therapy is required in a case with subtotal resection and higher grade on histology in form of chemotherapy, radiotherapy and vascular embolization. Hemangioendothelioma are moderately radiosensitive tumors. Local radiotherapy is also useful in treating inaccessible hemangioendothelioma with good long-term local control. Recurrence is usually rare after total resection.<sup>3</sup>

### CONCLUSION

Spindle cell hemangioendothelioma is a low-grade tumor. HE is rare, but should be considered as a possible diagnosis when a tumor presents as a lobulated mass, with hemorrhage, signal voids of vessels, a heterogeneous appearance and delayed enhancement; these factors could potentially distinguish HE from other primary brain neoplasms. CT and MRI may be useful in providing an early and accurate diagnosis; each method is important due to the propensity of the tumor for abundant vascularization and low-grade malignant biological behavior.. Prognosis and treatment of hemangioendothelioma have not been well established. Involved-field radiotherapy is the only modality commonly used following incomplete tumor resection or tumor recurrence.

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## CASE REPORT

### A case of Cavernous Haemangioma over Urogenital site

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**KEYWORDS :** Haemangioma Vascular Abnormalities Vulva

#### ABSTRACT

Hemangiomas are developmental vascular abnormalities and more than 50% of these lesions occur in the head and neck region, with the lips, tongue, buccal mucosa, and palate most commonly involved. One of the most complicated areas a hemangioma can develop in is the urogenital area or anogenital area. Most congenital hemangioma regresses spontaneously without treatment. However surgery is the therapy of choice in the isolated vascular lesions

#### INTRODUCTION

Hemangiomas are considered as benign tumors, being characterized by 3 stages: Endothelial cell proliferation, rapid growth and at last spontaneous involution. The pathophysiology of hemangiomas is attributed to genetic and cellular factors, mainly to monocytes, which are considered the potential ancestors of hemangioma endothelial cells. Imbalance in the angiogenesis, which causes an uncontrolled proliferation of vascular elements, associated with substances such as vascular endothelial growth factor (VEGF), basic fibroblast growth factor (BFGF) and indole-amine 2,3-dioxygenase (IDO), which are found in large amount during proliferative stages, are believed to be the cause.[1]

#### CASE REPORT

A full term, 37 week gestational age newborn, female, 1 day old, 2,540 g birth weight, born by normal delivery was transferred to our department for management of vulvovaginal mass since birth.

Physical examination revealed a 2x3x3 cm irregular shaped single friable mobile polypoid non pulsatile mass at the vulvovaginal junction with a connecting stalk at its superior pole with the inferior border of umbilical ring. There was no discharge from the mass but bled on touch. On auscultation no murmur or thrill was heard. The urethral and the vaginal openings were separate and did not reveal any communication with the mass on P/V examination. The labia majora and minora were well defined and separate from the swelling. The umbilical cord was normal in appearance with no discharge. No other congenital defects were noted or malformation found and 2D echo was normal.

Doppler USG was performed which showed a large vessel and vein coursing through the mass and suggested possibility of arteriovenous malformation. Blood tests and coagulation profiles were normal except mild physiological jaundice. There was no evidence of pathological jaundice due to increased hemolysis. There was no evidence of cardiomegaly or hyper dynamic circulation.

An excision and biopsy of the mass was planned on the 5th day of birth with appropriate pre-operative investigations and facility for blood transfusion available. The stalk was ligated and cut from the umbilical ring and the mass excised at base using cauterization. Reconstruction of labia minora done. Post-operative course was uneventful and the neonate was discharged home on post-operative day 4 (9th day of birth) being completely asymptomatic. The biopsy of the mass confirmed our findings as cavernous hemangioma.

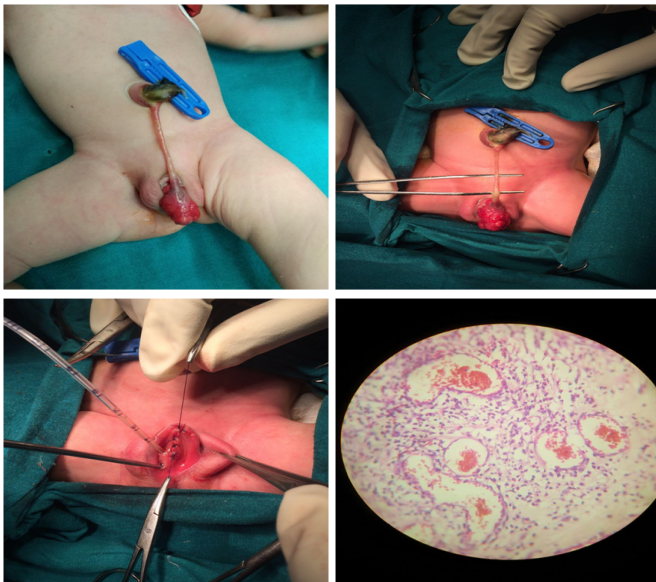
#### DISCUSSION

Hemangiomas are developmental vascular abnormalities characterized by a proliferative growth phase and by very slow inevitable regression (involution phase). Risk factors include prematurity, low birth weight, female sex, and white race. Clinically hemangiomas are characterized as a soft, smooth or lobulated, sessile or pedunculated and may be seen in any size from a few milli-meters to several centi-meters. The color of the lesion ranges from pink to red purple and tumor blanches on the application of pressure, and hemorrhage may occur either spontaneously or after minor trauma.[2]. They are generally painless. Radiographic imaging is indicated preoperatively in selected cases where large

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lesions may impinge on vital anatomical structures, such as the facial nerve or orbit. Computed tomography (CT) and magnetic resonance imaging (MRI) can also be used for volumetric analysis of hemangiomas and vascular malformations. Imaging resources can also be useful in both diagnostic differentiation and analysis of lesion features with regard to its size, extension and location, as well as for follow up of lesions treated under a systemic therapy.[3]

There are many treatment modalities reported in the literature including wait and watch policy[4][5] for

spontaneous involution, intralesional and systemic corticosteroid treatment, embolization, excision, electrolysis and thermo cautery, immunomodulatory therapy with interferon alfa-2a, and laser photocoagulation. Recent interest has centered on interstitial delivery of laser energy to photocoagulate vascular lesions. Currently, sclerotherapy is employed largely because of its efficiency and ability to conserve the surrounding tissues.

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## CASE REPORT

### Malrotation Masquerading as Duodenal Atresia: Case Report and Review of Literature.

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**KEYWORDS :** Haemangioma Vascular Abndrmalities Vulva

#### ABSTRACT

Intestinal malrotation is a relatively uncommon condition with diverse outcomes. Familiarity with variations in the presentation of malrotation is imperative as early diagnosis and prompt subsequent surgical intervention are essential to optimizing outcome. We report a rare case of a 34 weeks preterm neonate who presented with complaint of non-bilious vomiting since birth. Antenatal ultrasonography showed two dilated cystic structures with polyhydramnios, suggestive of duodenal atresia. X-ray abdomen standing after birth showed classical 'double-bubble' appearance. The contrast study was suggestive of dilated stomach and 1st part of duodenum with total absence of distal bowel gas which suggested possibility of duodenal atresia. Exploratory laparotomy was done which revealed malrotation of gut with Ladd's band with normal patency of distal bowel. Division of Ladd's band, derotation of gut, widening of base of mesentery, and appendectomy was done. Child recovered uneventfully and no recurrence of symptoms on subsequent follow-up for 3 months.

#### INTRODUCTION

Duodenal atresia is one of the most common sites of neonatal intestinal obstruction. The incidence of duodenal atresia has been estimated at 1 in 6000 to 1 in 10,000 live births[1]. Duodenal atresia is often discovered on antenatal sonogram. Maternal polyhydramnios and classic 'double-bubble' sign on fetal ultrasonography suggests the diagnosis. Duodenal atresia is due to embryo's developmental defect, in which the duodenum does not normally change from a solid to a tube-like structure.

We present here a rare case of actual neonatal malrotation, which masqueraded as duodenal atresia.

Neonatal intestinal malrotation is rare congenital condition caused by absence of or incomplete rotation of small bowel around the axis of the superior mesenteric artery during embryonal period[5]. The incidence in general population is one for every 200 to 500 newborns. Symptomatic cases are infrequent, occurring in one of 6000 newborns.

During normal abdominal development, three divisions of GI tract (i.e. foregut, midgut, hindgut) herniate out from the abdominal cavity, where they then undergo a 270° counterclockwise rotation around the superior mesenteric vessels. Following this rotation, bowels return to abdominal cavity, with fixation of duodenojejunal loop to the left of the midline and the cecum in right lower quadrant[6].

Interruption of typical intestinal rotation and fixation during fetal development can occur at a wide range of locations; this leads to various acute and chronic presentations of disease. The most common type found in pediatric patients is incomplete rotation predisposing to midgut volvulus, requiring emergent operative intervention.

#### CASE REPORT

A 24 hours old preterm (34 weeks), 1.9 kg weighing male child was referred to surgery from neonatal intensive care unit. It was prenatally diagnosed as a case of duodenal obstruction on ultrasonographic findings of polyhydramnios with 'double-bubble' appearance. On examination, baby was alert, active, and had no obvious external morphological congenital anomalies. There was upper abdominal fullness and nasogastric tube drained non-bilious aspirate. External genitalia and anal opening were normal.

Further evaluation by X-ray abdomen showed the classic 'double-bubble' appearance of duodenal atresia with total absence of distal bowel gas [Figure 1].

Contrast study was suggestive of dilated gas filled stomach and first part of duodenum with twisting of mesentery along with small bowel loops and mesenteric vessels which represented volvulus. No evidence of gas was seen in the distal bowel loop which suggested possibility of associated duodenal atresia. Another possibility was non-rotation or malrotation of gut with midgut volvulus.

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**Figure 1: X-ray abdomen showing classical 'double bubble' appearance of duodenal atresia.**



**Figure 2: Intra operative picture of bowel loops.**



Echocardiography didn't reveal any congenital heart anomaly. Ophthalmological examination was normal and stromme syndrome was ruled out. Based on this information, child was taken-up for surgery.

On exploratory laparotomy stomach and 1st part of duodenum were dilated. There was malrotation of gut. There was a 'Ladd's band' obstructing duodenum. Rest of bowel was normal [Figure 2].

So division of Ladd's band, derotation of gut, widening of base of mesentery and appendectomy was done.

Postoperatively child was kept on ventilatory support for a day.

Gradually increasing nasogastric feed was started from postoperative day 3. The child was on full breast feed by postoperative day 5 and discharged from hospital.

### DISCUSSION

The absence of a complete rotation of the midgut, during the embryonal period, is the key to the physiopathology of intestinal malrotation.

The duodenum does not assume its normal position, posterior to the superior mesenteric artery. Consequently, there is no fixation of the mesentery in posterior abdominal wall. This causes intestinal torsion through the superior mesenteric artery, one of the most

common complications of rotation abnormalities[2].

Clinical presentation of intestinal malrotation can be unspecific. Most of intestinal malrotation patients present signs of obstruction during neonatal period and this condition should be considered in all newborns with bilious vomiting and abdominal pain[1].

The diagnosis of intestinal malrotation can be confirmed with upper GI tract contrast imaging[3][4]. That can reveal a vertical duodenum, with a right location in the abdominal cavity, and the absence of the duodenojejunal angle. These results are found in nearly 80% of the patients[4].

A double-contrast barium enema can show abnormal cecal location, just below liver, near midline, and entire colon located laterally to spine on left side[3].

CT scan can also identify these abnormal positions of small bowel and colon and opposite positioning of superior mesenteric vein, located on left side of the artery. It may also be helpful in identifying acute obstruction[3].

The Ladd procedure, initially described in 1936, is the classic surgical treatment for intestinal malrotation[2]. It is described as an association of the mobilization of the duodenum and the right colon, section of the Ladd's bands, section of possible adhesions near the superior mesenteric vessels and appendectomy.

The aim of this procedure is to reduce the risk of acute volvulus, by positioning small intestine in a non-rotating position and widening the base of the mesentery.

Appendectomy is performed due to possible difficulty in the diagnosis of future appendicitis, distant from the classic lower right quadrant position.

### OUTCOME AND FOLLOW UP

The patient was discharged after it recovered uneventfully. There was no recurrence of symptoms on subsequent follow-up for 3 months.

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## CASE REPORT & BRIEF COMMUNICATION

### Rare Case Report-Bombay Blood Group & its Transfusion Impact

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**KEY WORDS** : Rare Blood group ,Bombay blood group,Transfusion Impact

#### ABSTRACT

The Bombay Blood Group is the rarest blood group first reported in Bombay, India. 55 year old female patient who is admitted in Zydus Hospital with planned spine surgery . For preoperative major profile blood sample was sent to our blood bank for grouping & other lab investigations. Both forward and reverse grouping were done by GAMMA Immucor Automation (microplate method) resulting discrepancy between forward and reverse grouping. Both are important for safe transfusion, if not followed may lead to people with Bombay blood group not being detected, categorized as O group and cause severe hemolytic reaction. So therefore reverse or serum grouping is necessary to detect this group. We present one rare case which was diagnosed in our hospital.

#### INTRODUCTION

Bombay phenotype is one of the rarest ABO blood groups. The antigens of ABO group (A, B, and H) are complex carbohydrate molecules. The A and B antigens expression is determined by the presence of H antigen on red blood cells. H antigen can be synthesized by H gene (FUT1) which is located on chromosome 19 and give rise to glycosyltransferase that add L-fucose to a precursor substance to produce H antigen on red cells. H antigen is an essential substance to A transferase or B transferase which are encoded by the ABO genes located on chromosome 9.<sup>[1]</sup> A and B transferases convert H antigen into either A or B antigens, respectively. In group O individuals, the O allele produces an inactive transferase. Therefore, H substance persist unchanged as group O.<sup>[2]</sup> Individuals with extremely rare Bombay phenotype fail to express H transferase. They cannot synthesize A or B antigens, and ABH antigens are absent from their red cells, regardless of their ABO blood group genotype.<sup>[3]</sup> In Bombay phenotype, there is a void of A antigen, B Antigen as well as H antigen<sup>[3]</sup>. Since their red cells do not react with anti-A, anti-B, and anti-AB antiserums, they can be recognized as the O blood group in cell typing. Their plasma contains anti-A, anti-B, and strong anti-H which can be hemolytic and is reactive with all blood types except the Bombay phenotype. As a result, individuals with the Bombay phenotype can only be safely transfused with autologous blood or other Bombay red cells.<sup>[4]</sup>

#### CASE PRESENTATION

55 years old female admitted in ortho department for planned spine surgery. Her preoperative profile was sent to laboratory & blood group was part of it. Blood grouping tests are performed on Immucor GAMMA Automation . In which forward & reverse grouping were performed. Result status displayed was NTD means not determined. In immucor GAMMA image based analysis is possible. In which Forward grouping shows no agglutination with Anti A, Anti B & anti AB & grade 4 agglutination with Anti D1 & Anti D2 which is suggestive of O positive. Reverse grouping shows grade 4 agglutination with A1 cells & A2 cells , B cells & O cells. Results showed pan-agglutination. Cold agglutinins were suspected . Laboratory had performed a DAT. Results of the DAT were negative. At this point, it raised attention because some other antigen not on the panel was responsible for this finding. Now, the presence of a rare blood type was also suspected. After repeating the tests and determining it was not a laboratory procedure error, further evaluation was required. An expanded panel, which had anti-H lectin, was then performed on the patient's blood. Normally, all blood types will agglutinate with anti-H lectin. This patient did not react with anti-H lectin, confirming Bombay phenotype. H-blood group substance was then added to anti-H serum in vitro and neutralization occurred. This confirmed the presence of anti-H in the serum. On taking further history, it was found that she was a tribal girl originally from a tribal state

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of Gujarat .Two units of blood were required for the patient for her spinal surgery.Department of transfusion medicine of Zydus hospital arranged two units of blood -one from the voluntary blood donor from Rajkot & other from blood bank of Mumbai.Patient was transfused successfully without any transfusion reaction.

### DISCUSSION

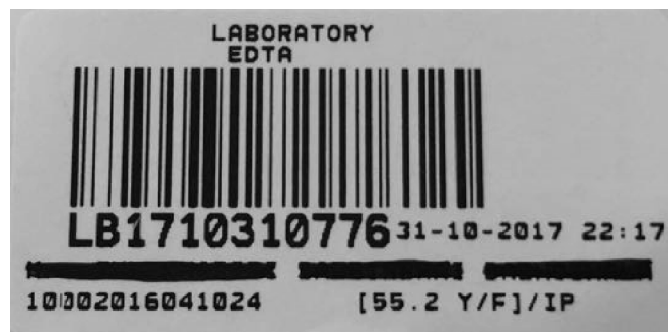
Bombay phenotype was first reported by Bhende in 1952 in Bombay, India.<sup>(5)</sup> More than 130 Bombay phenotypes have been reported in various parts of the world. Bombay phenotype is rare, since it occurs in about 1 in 10,000 individuals in India and 1/1,000,000 individuals in Europe.<sup>(3)</sup> It is rare in Caucasian with incidence of 1 in 250,000. Regarding the distribution and spread of the Bombay phenotype in different states of India, it is apparent that the phenotype is more common in the states of Western and Southern parts of India when

Well	Reagent	Well Image	Reaction Strength	Original Grade	Revised Grade
E02	Reagent 1		99	4	4
F02	Reagent 2		92	4	4
G02	Reagent 3		99	4	4
H02	Reagent 4		97	4	4

(Figure II Microplate Image-antibody screening)



(Figure III Anti H Tube test with control)



Well	Reagent	Well Image	Reaction Strength	Original Grade	Revised Grade
F01	Anti-A		9	-	-
F02	Anti-B		12	-	-
F03	Anti-AB		12	-	-
F04	A1-Cell		86	4	4
F05	A2-Cell		85	4	4
F06	B-Cell		82	4	4
F07	O-Cell		84	4	4
F08	Auto		15	-	-

(Figure Ia: Microplate Image- Blood Group)

F09	Anti-D1		96	4	4
F10	Anti-D2		97	4	4
F11	Rh Control		15	-	-

(Figure Ib Microplate Image- Blood Group)

compared to other states.<sup>[6]</sup> In a more recent study from South India, consanguinity among parents was observed in 10 cases (77%) in a study amongst Bombay phenotypes.<sup>[7]</sup> However, in our case none of the parents had a history of consanguineous marriage.Although rare, the Bombay Oh phenotype patients can have severe or fatal hemolytic transfusion reactions if the blood group is missed.<sup>[8,9]</sup> Awareness amongst treating doctors is a very important issue in managing such patients. In a recent case report from Iran, transfusion reaction in a case of Bombay blood group patient has been described and the reason for missing out on Bombay group has been stated as, only forward grouping being performed in routine with crude slide method and inappropriate documentation of cross matching.<sup>[10]</sup> It is very important that a simple test like blood grouping should be done with serious intention and correct method of including both forward and reverse grouping (a practice still needs full implementation) so that no patient is missed out or receives wrong blood, which could lead to serious hemolysis due to transfusion. The Bombay Oh phenotype can be missed if O cells are not used in reverse blood grouping and moreover routine anti-H lectin not being used in forward grouping increases the possibility further. Implementing a quality system in the laboratory minimizes errors and ensures that the right test is performed on the right sample, the right results obtained and the right blood product provided to the right



patient at the right time. Although in India awareness about quality management systems and accreditation activities has increased, still there are a lot of blood centers which need to follow the correct blood grouping procedures. The individuals with Bombay blood group (Oh) can either receive autologous blood or blood from an individual of Bombay phenotype only

### CONCLUSION

A simple test like blood grouping should be done with serious intention with incorporation of both forward and reverse grouping, so that no patient is missed or receives wrong blood leading to fatal hemolysis due to transfusion.

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