

CASE REPORT

GYNAECOLOGICAL TURP SYNDROME

Vincent Mathias¹, Danish Omair², K. P. Jayakrishnan Nambiar³

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ABSTRACT: Hysteroscopy is used extensively in Gynaecological practice both for diagnostic & therapeutic conditions. The technique of endoscopy guided electrosurgical resection was adapted from urology to gynaecology for the removal of uterine leiomyomas. . Under normal circumstances uterine cavity is a potential space and the anterior & posterior walls are in apposition. A distension medium is required to expand the endometrial cavity for viewing. These may be of 2 types. 1. Gaseous e.g, co 2.2. Liquid media. e.g., Glycine 1.5%, 3.3% sorbitol, Mannitol, Cytal & urea. Each one, is having its own advantages & disadvantages. We used glycine 1.5% as distending media because it is readily available, cheap, fairly good visibility, compatible with electrocautery. Major disadvantage is, it intravasates into vascular tree in significant amounts causing profound Hyponatremia, Hypervolemia and finally pulmonary congestion or pulmonary edema depending upon to patients cardiac reserve. We named this complication as "Gynaecological TURP syndrome as, similar complication usually occur in TURP surgery for Benign enlargement of prostate.¹ We report this complication as a case report. A young patient aged 32 years under went hysteroscopic submucous resection of fibroid using Glycine 1.5% as distending media and because positive fluid over load of 2 litres, Patient developed Hyponatremia, pulmonary edema, Diagnosed immediately & successfully treated.

KEYWORDS: Turp Syndrome, Hyponatremia, Pulmonary edema, Glycine.

INTRODUCTION: TURP surgery is commonest surgery for benign enlargement prostate in urology practice. Here glycine 1.5% is used as irrigating solution for operative visibility, distension of the bladder, to wash out blood & resected prostate tissue. Glycine 1.5% relatively Hypoosmolar (Osmolality 230mosm/lit), Nonelectrolyte solution intravasates into vascular tree in excessive amounts causing Hyponatremia, hypoosmolar state, fluid overload and may lead to pulmonary edema. This result in a constellation of signs and symptoms commonly referred to as the TURP syndrome.¹

A disorder similar to TURP syndrome may occur in women undergoing endometrial ablation that utilizes irrigation fluids such as Glycine 1.5% to distend the uterine cavity and to improve surgical visualization. Hysteroscopy surgery associated with complications such as Uterine perforation, excessive bleeding, infection and complications related to distension media.

The Anesthesiologist involved in Endoscopic Gynecological procedures should well aware of critical nature of this condition when Glycine 1.5% used as distending media.²

CASE REPORT: A middle aged female patient aged 32 years ASA grade 1, weighing 48 kgs posted for Hysteroscopy for submucous myoma excision.

A detailed pre anaesthetic checkup done. History physical examinations, investigations and airway examinations were within normal limits.

On examination pulse was 80/minute and Blood pressure 110/70mmHg. Patient premedicated with inj. Glycopyrolate 0.2mg in 30 minutes before induction.

CASE REPORT

General Anaesthesia was planned. Anaesthetic plan as well as surgical procedure explained to patient and informed consent was taken.

ANAESTHETIC MANAGEMENT: After securing IV line with 20G in cannula 500ml of Ringers Lactate in fluid started. Standard monitors (ECG, Pulse oximeter, Noninvasive blood pressure (NIBP) End tidal co2 were attached & the Base line vitals recorded. Inj. Fentanyl 50mg, inj Midazolam 1mg administered. Patient induced with inj propofol 100mg mixed with 2ml of 2% plain xylocaine. Vecuronium bromide 5mg in given, after IPPV with 100% oxygen for 3 minutes, Patient intubated with 7 no. cuffed endotracheal tube. Maintenance of anaesthesia by combination of O₂:N₂O 33-66%, sevoflurane 1-2%, on controlled ventilation. Patient was put on Lithotomy position and Hysteroscopic submucous excision was done by using Glycine 1.5% as distending media. Whole procedure took around 45 minutes. Around 6 litres of Glycine 1.5% was used and around 3-4 litres of Glycine mixed with blood collected. At the end of surgery, we noticed gradual decrease in oxygen saturation (Saturation gradually decreased from 99% to 88-90%), and on auscultation, Bilateral coarse crepitations were heard. Nitrous oxide stopped and patient was ventilated with 100% oxygen. Provisional diagnosis of Glycine induced pulmonary edema made. Inj. Frusemide 40mg iv given. Patient shifted to ICU and connected to ventilator with following ventilator settings. Fio₂ 100%, tidal volume 500ml, resp. rate 12/min. PEEP 5. Once patients spontaneous breathing started patient was put on SIMV mode. Sedation is by 1mg intermittent doses of Midazolam. Chest x-ray was advised. Blood send for investigations. Chest X-ray showed radiological evidence of pulmonary edema (Bilateral non homogenous opacity) and Serum Na⁺ level was 108 meq/L. These investigations, Confirmed the diagnosis of diluitional hyponatremia with pulmonary edema. The following treatment started immediately:

- Inj. Frusemide 40mg iv and & then BID.
- 100 ml of 3% hypertonic saline (Slowly over 4-8 hours, 12.5 to 25ml /hour).
- Dobutamine. 2-4mcg/min (Patient had Hypotension)
- Inj, Hepmerez-L-asparate. 3 vials in 500ml of DNS over 24 hours at rate of 30cc/hour in view of possible Hyperammonemia.

Urine output at the end of 8 hours was 2 litres. After 24 hours of ICU treatment patient's condition improved. Repeat ABG, Chest X-ray. Serum sodium level (Sodium 130 Meq/l) were within normal ranges. Fio₂ gradually decreased from 100% to 30% At the end of 24 hours, ventilatory support stopped, patient extubated after fulfilling all extubation criteria. Patient shifted to postoperative ward. All supportive treatment was stopped. Patient was put on 4litres of oxygen/min via face mask. After 24 hours of postoperative admission, patient maintaining oxygen saturation of 97-98% on room air. Repeat Sodium level, chest X-ray ABG was also normal. Patient started orally. Rest of the postoperative course uneventful. Patient discharged on 6th postoperative day.

CASE DISCUSSION: Hysteroscopy is used extensively in Gynecological practice both for therapeutic and diagnostic purposes. For hysteroscopic procedures distension of the uterine cavity absolutely essential. Distension of the uterine cavity is carried out by variety of distension media. There are 2 types of distension media:

1. Gaseous. Eg. Co₂.
2. Liquid media. eg. Normal saline, 1.5% Glycine, 3.3% Sorbital, Mannitol, cytal, Urea.^{2,3}

CASE REPORT

For our patient we used 1.5% Glycine as the distending media, as this is readily available, cheap, fairly good visibility, and compatible with standard electrocautery. Disadvantage 1.5% Glycine are it is, miscible with Blood giving distorted view, requires continuous flow of irrigation, intravasates into Vascular tree in significant amounts, causing profound Hyponatremia, hypervolemia, leading to pulmonary congestion, & pulmonary edema. Solute absorption causes Hyperglycemia, in turn results in Hyperammonemia, causing cerebral effects. If not diagnosed early patient may develop cerebral, cardiac complications due to Hyponatremia, pulmonary edema. Commonly this complication occurs in, during or after TURP surgery, where Glycine 1.5% used as irrigating solution. We named this complication "Gynecological TURP syndrome" as similar complication occurs in TURP surgery for benign enlargement of prostate, following intravascular absorption of glycine 1.5%.⁴

Signs & Symptoms of this TURP Syndrome include:

- Head ache.
- Restlessness.
- Confusion.
- Dyspnoea.
- Arrhythmias.
- Hypotension.
- Seizures.⁵

Commonly TURP surgery done under Regional Anaesthesia, & diagnosis of this syndrome is easier as this patient is awake, but our patient received General anaesthesia, for the procedure. In our case diagnosis is done by clinical suspicion by decreased O₂ saturation and bilateral basal crepitation's, and confirmation of diagnosis by low serum Sodium level and Radiological features of pulmonary edema on chest x-ray.

Patient responded well with Loop diuretics, 3% hypertonic saline, positive pressure ventilation, with PEEP, Hepmerez administration. Hepmerez contains Arginine which prevents degradation of Glycine into Ammonia. In our case there was a positive fluid balance of 2litres which was the cause of this complication.⁶

Mechanisms involved for volume overload are, absorption of fluid across the Endometrium, intravasation into surgically opened venous channels, spill from the fallopian tubes with subsequent absorption by peritoneum wall. This complication common in following clinical settings:

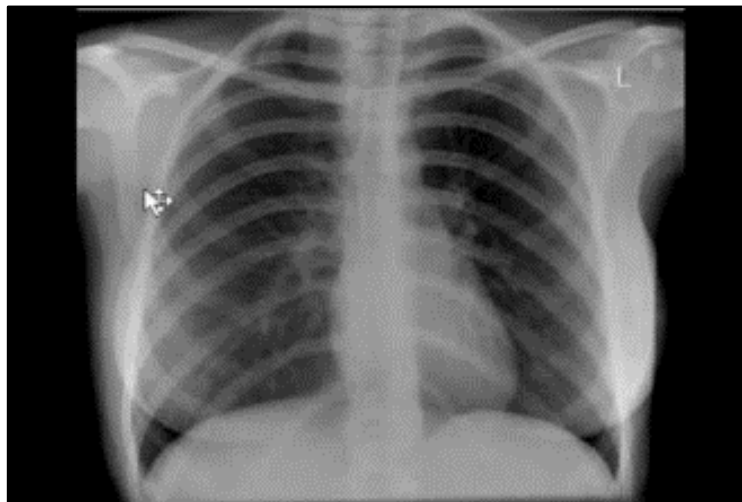
- Long procedures.
- Use of High distension pressures.
- Resection of large tissue and more vascular endothelium.
- This complication can be prevented by following precautionary measures.
- Close observation of the patient intraoperatively. (Regional techniques allow observation of early symptoms).
- Measurement of baseline serum Electrolytes (Mainly serum sodium level) before undertaking any Hysteroscopic procedures.
- Keeping distending pressure minimum (Usually between 45-80 mmHg).
- Keeping the irrigating solution height not more than 1 meter (Infusion pressure of 73 mmHg)
- Limit duration of the procedure preferably less than 30 minutes.
- Calculation of the volume deficit at every 15 minutes. if the deficit is more than 1500ml, stop the procedure immediately.^{7,8}

CASE REPORT

CONCLUSION: Anaesthesiologists/Gynaecologists should aware of the critical nature of this complication which is associated with Hysteroscopic surgeries. For a positive outcome early diagnosis and treatment is must and needs high level of suspicion. Main diagnostic indicators are decrease serum sodium concentration, Radiological feature of pulmonary edema, on Chest X-ray. Measurement of plasma osmolarity, plasma Glycine concentration, (Normal level, 13-17 mg/dl), Blood ammonia level (Normal level 5-50 micro mol/L) also important in the diagnosis. Once the diagnosis made immediate treatment by loop diuretics, sodium replacement. Hepmerez infusion, Endotracheal intubation and ventilatory support, inotropic support also considered depending upon severity of the condition. Finally goal of the treatment is to prevent cardiac failure and potential brain damage.

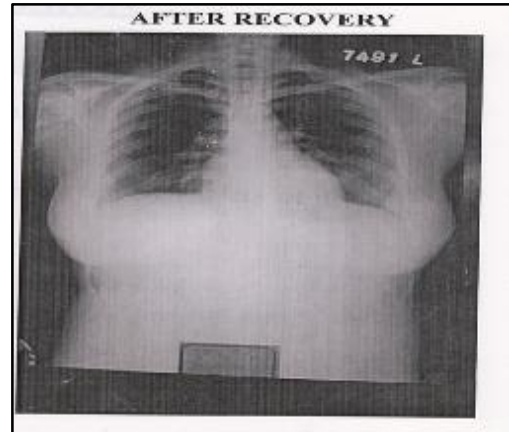
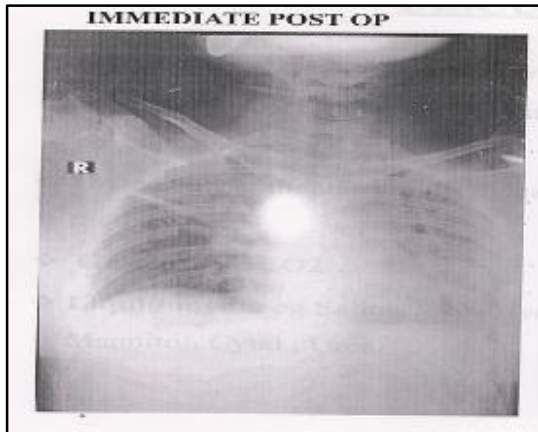
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Normal Pre-Operative Chest X-Ray

CASE REPORT



AUTHORS:

1. Vincent Mathias
2. Danish Omair
3. K. P. Jayakrishnan Nambiar

PARTICULARS OF CONTRIBUTORS:

1. Professor, Department of Anaesthesiology, Kananchur Islamic Educational Trust, Mangalore.
2. Assistant Professor, Department of Anaesthesiology, Kananchur Islamic Educational Trust, Mangalore.

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3. Assistant Professor, Department of Anaesthesiology, Kananchur Islamic Educational Trust, Mangalore.

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Vincent Mathias,
'Vinjoy' Near Dominos Restaurant,
ESI Hospital Road, Lower Bendoor,
3rd Cross, Mangalore-575002.
E-mail: vincentmathias219@gmail.com

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