

## Case report

Abdominal compartment syndrome following sigmoidopexy for sigmoid volvulus – significant role of NG tube and Flatus tube – A case report.

**Comment [CHP1]:** Abdominal compartment syndrome following sigmoidopexy for sigmoid volvulus - the significant role for NG and Flatus tubes - A case report

**Abstract** – The detrimental effects of intraabdominal HTN and abdominal compartment syndrome affect almost every systems by altering organ perfusion<sup>1</sup>. ACS is life threatening and is not very uncommon in our practice. There is a clinical scenario of 70 yrs male with history of absolute constipation and abdominal distention with pain in abdomen, he was attended at Govt. hospitals ER and was diagnosed as volvulus sigmoid colon and immediate laparotomy with sigmoidopexy done. closure of abdomen done without any abdominal drain tube and patient was attempted for extubation but not achieving adequate %spo2 and shifted to ICU with intubated state. Following night of operation patient abdomen was becoming tense and diagnosed ACS and immediate Flatus tube and NG tube inserted. both tube kept in situ >48 hours and patients abdomen becoming soft and normal. In this scenario NG tube and per rectal flatus tube plays significant role in managing ACS.

**Comment [CHP2]:** ...every system...

**Comment [CHP3]:** Abdominal compartment syndrome (ACS) is life-threatening...

**Comment [CHP4]:** ...with a history...

**Comment [CHP5]:** ...pain in the abdomen.

**Comment [CHP6]:** He was attended at Govt. hospitals ER and was diagnosed with volvulus sigmoid colon, and immediate laparotomy with sigmoidopexy was done. The abdomen was closed without any abdominal drain tube, and the patient attempted extubation but not achieving adequate %spo2 and was shifted to ICU in the intubated state. Following the night of the operation patient's abdomen was becoming tense, and diagnosed with ACS. Immediately a Flatus and NG tubes were inserted. Both tubes were kept in situ for >48 hours, and the patient's abdomen became soft and normal. In this scenario NG tube and per rectal flatus tube plays a significant role in managing ACS.

**Keywords:** Abdominal compartment syndrome, Sigmoidopexy, Flatus tube, organ hypoperfusion

**Introduction:**

If abdominal cavity is treated as closed fluid compartment the pressure within it obeys Pascal's hydrostatic law –when pressure is applied to contained fluid, the forces transmitted equally in all direction. The pressure measured at any point within the cavity at any given time can be taken to represent intraabdominal pressure in the entire abdomen<sup>1</sup>. Intraabdominal HTN refers to sustained or repeated pathologic elevation of IAP >12 mm hg while abdominal compartment syndrome is defined as sustained IAP over 20 mm hg [ with or without abdominal perfusion pressure (APP) < 60 mm of hg.] that is associated with new organ dysfunction<sup>1,2</sup>.

**Comment [CHP7]:** Suppose the abdominal cavity is treated as a closed fluid compartment. In that case, the pressure within it obeys Pascal's hydrostatic law –when pressure is applied to the contained fluid, the forces are transmitted equally in all directions. The pressure measured at any point within the cavity at any given time can be taken to represent intraabdominal pressure in the entire abdomen<sup>1</sup>. Intraabdominal HTN refers to sustained or repeated pathologic elevation of IAP >12 mm hg. At the same time, abdominal compartment syndrome is defined as sustained IAP over 20 mm hg [ with or without abdominal perfusion pressure (APP) < 60 mm of hg.] that...

**Case Presentation:**

A 70 yrs male had a history of absolute constipation for 7 days with distended abdomen and pain for 2 days. with this complaints he got admitted into a Government hospitals ER and diagnosed as a case of volvulus sigmoid colon and undergo immediate laparotomy through a long midline incision at hospitals evening session time. Sigmoidopexy was done. after operation patient anaesthetic recovery was delaying and abdomen becoming distended, extubation attempted but not achieving adequate %SP02 and then patient in intubated state shifted in ICU. Day after evening of operation patient shifted to a private hospital's ICU and found raised intrabdominal pressure ( avg. >24 mm of hg ) with tensed abdomen. No abdominal drain tube was in situ and DRE reveals collapsed rectum. Immediate taping of abdomen by 10 cc syringe and then screening USG of abdomen was done and excluded any intraabdominal collection

**Comment [CHP8]:** A 70-year-old male had a history of absolute constipation for 7 days with a distended abdomen and pain for 2 days. With these complaints, he got admitted into a Government hospital's ER and diagnosed with a volvulus sigmoid colon. He underwent immediate laparotomy through a long midline incision at the hospital during evening session time. Sigmoidopexy was done. After the operation patient's anesthetic recovery was delayed, and the abdomen became distended. Extubation was attempted but not achieving an adequate %SP02; the patient was transferred to ICU. The day after the operation, the patient was moved to a private hospital's ICU and found to have raised intrabdominal pressure ( avg. > 24 mm of hg ) with a tensed abdomen. No abdominal drain tube was in situ, and DRE revealed a collapsed rectum.

(e.g blood , reactive exudative fluid) . A flatus tube(32 fr) introduced carefully through per rectum , proximal to rectosigmoid area and gush of air come out. Flatus tube kept in situ . on the consequence of raised intraabdominal pressure ,pt develops bilateral lungs opacity with reduce air flow into lungs and increase fio2 demand in ventilator even after moderate raise of PEEP , his renal number also raised upto 2.3 mg/dl. Intense reassurance of patient with Gradual monitoring of ventilatory setup and starting of TPN,correction of dyselectrolytaemia, good coverage of antibiotics and other logistic supports of ICU,patients intraabdominal pressure reduced and other organ systems functioning his normal with a moderate SSSIs.



Fig.1 :Abdominal drain tube

Discussion: Abdominal compartment syndrome has its deleterious effects because of organs hypoperfusion and damage<sup>1</sup>. ACS specially affects Lungs, kidneys, Gut and alsomay affects all organ systems. ACS can be diagnoseby regular measuring of intravesical pressure by special transducer through vesical catheter and can be display on monitor 4-6 hrs interval<sup>1</sup>. NG tube and per rectal flatus tube can help to reduction of IAP<sup>2</sup>.

Conclusion : simple introduce of continuous per rectal flatus tube and NG tube can significantly reduce intraabdominal pressure in case of sigmoidopexy ,though per operative abdominal drain tube cant be ignore.

**Comment [CHP9]:** Immediate taping of the abdomen by 10 cc syringe and then a screening ultrasound of the abdomen was done and excluded any intraabdominal collection (blood, reactive exudative fluid). A flatus tube (32 fr) is introduced carefully through the rectum, proximal to the rectosigmoid area, and a gush of air emerges. Flatus tube kept in situ. As a consequence of raised intraabdominal pressure, the patient develops bilateral lung opacity with reduced airflow and increased fio2 demand in the ventilator even after a moderate rise of PEEP. His renal number also raised to 2.3 mg/dl. Intense reassurance of patient with gradual monitoring of ventilatory setup and starting of TPN, correction of dyselectrolytemia, good coverage of antibiotics and other logistic supports of ICU; patient intraabdominal pressure reduced and other organ systems functioning his normal with moderate superficial surgical site infections (SSSI).

**Comment [CHP10]:** Discussion: Abdominal compartment syndrome has harmful effects because of organ hypoperfusion and damage<sup>1</sup>. ACS mainly affects the lungs, kidneys, and gut and may affect all organ systems. ACS can be diagnosed by regular measuring of intravesical pressure by a special transducer through the vesical catheter and can be displayed on the monitor at 4-6 hrs intervals<sup>1</sup>. In addition, NG and rectal flatus tubes can help reduce intraabdominal pressure<sup>2</sup>.

**Comment [CHP11]:** Conclusion: the simple introduction of a continuous flatus tube through the rectum and an NG tube can significantly reduce intra-abdominal pressure in the case of sigmoidopexy, although the abdominal drainage tube cannot be ignored.

**Learning points:**

Sigmoidectomy increases IAP more rather than resection surgery.

Flatus tube and NG tube has significant role in ACS.

ACS compromise organ perfusion and may cause SSSIs (superficial surgical site infections) by compromising capillary vasculature in abdominal wall.

Early prediction and aggressive ventilatory and other critical care support ( eg. TPN, intense fluid management ,correction of dyselethrolytaemia, Antibiotics.) with vigilance can reduce the mortality rate though financial issues and adequate, proper counseling has significant role.

Consent: verbal consent has been taken from the patient .

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**Comment [CHP12]:** Learning points:

Sigmoidectomy increases intraabdominal more rather than resection surgery.

Flatus and NG tubes have a significant role in abdominal compartment syndrome.

ACS compromises organ perfusion and may cause SSSIs (superficial surgical site infections) by compromising capillary vasculature in the abdominal wall.

Early prediction and aggressive ventilatory and other critical care support (e.g., TPN, intense fluid management, correction of dyselethrolytemia, Antibiotics.) with vigilance can reduce the mortality rate through financial issues, and adequate, proper counseling has a significant role.

Consent: verbal consent from the patient was obtained.

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