



## A COMPARATIVE STUDY OF NISSEN'S FUNDOPPLICATION IN PARAESOPHAGEAL HIATUS HERNIA WITH OR WITHOUT MESHPLASTY

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**ABSTRACT** **Objective:** To find out whether to place mesh routinely or not during open or laparoscopic Nissen's fundoplication for the surgical treatment of Paraesophageal Hiatus Hernias. **Background:** Paraesophageal hernias accounts for 15 % to 20 % of total hiatus hernias. this includes type 2 (true paraesophageal), type 3 (mixed), type 4 (complex). These can be symptomatic as well as asymptomatic or found incidentally. Late diagnosis of these can lead to emergency presentations that's why all symptomatic paraesophageal hernias should be managed surgically. **Material And Methods:** In this prospective study we selected 20 patients of paraesophageal hiatus hernia over the period of time and did Nissen's fundoplication, in which 10 patients were operated laparoscopically and rest 10 were operated by open method selected randomly. In five cases of both open and laparoscopic Nissen's fundoplication procedure meshplasty was done to compare clinical outcome of patient with or without meshplasty. During our surgical procedure we did cruroplasty, meshplasty, fundoplication, and gastropexy. **Results:** The total Intra operative time of open surgery was less then laparoscopic procedure also mesh placement was somehow difficult in laparoscopic procedure, it was superior only in cosmesis. The clinical outcome of use of mesh or not, with or without gastropexy in our study were almost the same that was examined by radiological evidences and routine follow up for 3 weeks. **Conclusion:** All patients with paraesophageal hiatus hernia should undergo surgical procedure as early soon as possible to prevent acute symptoms and life-threatening complications like volvulus, strangulation, incarceration, perforation. There is no clinical significance of use of mesh or gastropexy in laparoscopic or open Nissen's fundoplication in our study. Our study supports use open procedure of Nissen's fundoplication surgery with multiple evidences.

**KEYWORDS :** fundoplication, hiatus hernia, mesh, gastropexy, laparoscopy

### INTRODUCTION

Patients with PEH may be completely asymptomatic, but more often, they have a variety of symptoms depending on the extent of the herniation. Three cardinal symptoms of paraesophageal hernias are reflux esophagitis, GERD, and dysphagia. Paraesophageal hernias often presents as surgical emergency with acute symptoms like chest or upper abdominal pain, respiratory failure, vomiting, dysphagia or sepsis due to gastric volvulus, strangulation or incarceration. Trauma, age, previous surgeries and genetics also play important role in development of hiatus hernias<sup>1</sup>. Diagnostic evaluation should be carried out that consists of barium meal X-ray, an upper gastrointestinal endoscopy to assess for mucosal lesions and other upper gastrointestinal pathology. There are four types of hiatus hernia, more than 90% of them are type III, and least common is type II<sup>2</sup>. In our study we selected hiatus hernia type II, III and IV. The surgeries we performed either by laparoscopy or open technique included cruroplasty, mesh placement, fundoplication, and gastropexy.

Our study includes 20 cases that were selected randomly over age of 30 years and results found to be in favour of open surgery of Nissen's fundoplication. Out of which 12 were female and rest 8 were male.



**Figure 1.** It shows adequate and proper technique of suturing during

fundoplication in open Nissen's fundoplication in which first suture is taken from oesophagus as well as stomach and rest two are taken from stomach alone. Also seesaw movement is checked to allow proper oesophageal peristalsis.

### MATERIAL AND METHOD

We selected 20 patients of paraesophageal hernias, diagnosed incidentally or symptomatically proven by upper GI endoscopy. All patients underwent routine blood investigations, barium meal X-ray, upper GI endoscopy preoperatively. All patients were above the age of 30 years. Out of 20 patients 10 were selected for laparoscopic procedure and rest 10 underwent open procedure of Nissen's fundoplication. Out of 10 laparoscopic procedures done, 8 were female and 2 were male. In open procedures, 6 were male and 4 were female. In 10 laparoscopic procedure 5 patients selected for meshplasty 4 were female and remaining one was male, in open procedures also 5 patients underwent meshplasty 4 male patient remaining one was female. In all cases we did cruroplasty which was graded as small (<3 cm), moderate (4-6cm) and large (>6cm) according to size of hiatus. In all these, adequate suture cruroplasty was done to give passage to oesophageal peristalsis. We used Ethibond as suture material in all cases. We ligated short gastric vessels, fundus and greater curvature of stomach from omentum. We also separated gastro oesophageal, phrenico-oesophageal ligaments from fundus of stomach and by the pars flaccida technique we made window adequately behind oesophagus and both vagus nerves and negotiated umbilical tape through it and retracted the oesophagus. After that we did seesaw to check the free movement of fundus and did Nissen's fundoplication in which first suture was taken from oesophagus in both open and laparoscopic procedure as shown in the picture and two sutures were taken over the stomach. So total three sutures were taken for fundoplication. In all cases of meshplasty, V shape polypropylene mesh was deployed over crura, diaphragm some part of oesophagus and stomach. After that gastropexy was done in five cases in open as well as in laparoscopic procedures in which stomach is hitched to anterior abdominal wall over diaphragm. We put all patients on Ryle's

tube during the surgery and removed on post operative day second. Post operatively all patients remained uneventful except in one case of laparoscopic Nissen's fundoplication in which right sided pneumothorax happened during surgery and immediately on operative table during surgery intercostal chest tube is inserted on the same side and patient improved till post operative day four. Post operative barium meal X-ray and upper Gi endoscopy were also performed in all the patients to check the adequacy of fundoplication. All patients discharged from post operative day third to day five. Post operative follow up was done up to three weeks. In two cases symptoms remained as it is even after discharge and rest eighteen cases improved symptomatically.



**Figure 2.** First Barium meal x-ray showing narrowing of midbody of stomach due to its paraesophageal herniation and second barium meal x-ray shows post operative recovery and adequacy of fundoplication after open Nissen's fundoplication procedure.

## RESULTS

In open surgery intra operative time was lesser than laparoscopic surgery, bleeding was also lesser than laparoscopic surgery, also post operatively only in one case there was persistence of symptoms like bloating, regurgitation, dysphagia in open surgery that was resolved by doing endoscopic balloon dilation. There was no difference in clinical outcome in patients who underwent meshplasty and procedure without meshplasty. Also, there was no significant difference seen clinical outcome in procedures with or without gastropexy.

Laparoscopic procedure was better for cosmesis purpose however it took more intraoperative time moreover in one case of laparoscopic Nissen's fundoplication intra operative complication of right sided pneumothorax happened which was treated by placing ICD on same side after which patient improved till post operative day four. somehow placing mesh laparoscopically was difficult then in open Nissen's fundoplication. In our study patient complaint of pain upper abdomen and regurgitation even after laparoscopic Nissen's fundoplication after discharge from hospital in one case.

So overall by our study, we can say that open Nissen's fundoplication is superior then laparoscopic Nissen's fundoplication however many studies prefer laparoscopic fundoplication over open<sup>3,4</sup>.



**Figure 3.** Post operative endoscopic pictures showing adequate suture and fundic wrap around the oesophagus.

## CONCLUSION

All paraesophageal hernias should undergo surgical intervention whether it is symptomatic or asymptomatic. Current recommendations are for operative repair of all symptomatic paraesophageal hernias as well as completely asymptomatic large hernias in patients less than 60 years old and otherwise healthy<sup>5</sup>. The 2013 SAGES guidelines for the management of hiatus hernias stated that the use of mesh for reinforcement of large hiatus hernia defects lead to a decreased short-term recurrence rate<sup>6</sup>. However there is no exclusive or proper study supports the indication of meshplasty for better clinical outcome. The most feared outcome of using mesh is oesophageal erosion, Muller-Stich did meta-analysis on use of variety of mesh in paraesophageal hernia surgeries and their complications<sup>7</sup> Our study also proves that use of mesh in Nissen's fundoplication doesn't change the clinical outcome of the patient. There are many retrospective studies done that

questioned the necessity of antireflux procedure like fundoplication in paraesophageal hernia repair<sup>8,9</sup>. However SAGES guidelines states that fundoplication is necessary step for surgical repair of paraesophageal hernias<sup>5</sup>. Many authors favour the use of anterior gastropexy with or without fundoplication<sup>10,11,12</sup>. Our study remains neutral for gastropexy as it shows almost no superiority of any kind either surgically or in clinical outcomes. Also, there is no literature or available evidence with long term follow up that strongly favours the use of mesh or gastropexy in surgical intervention for hiatus hernias. Our study supports the idea of surgical correction of hiatus hernia by open technique of Nissen's fundoplication as it gives better clinical outcome and less intra operative time, less intra operative complication and can be done in centres where laparoscopy instruments are not available.

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