

# Laparoscopic Nissen-Rossetti Fundoplication: Possibility toward Day Care Antireflux Surgeries

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## ABSTRACT

As we proceed towards more and more day care surgeries, we always need to choose patients and procedures within a great deal of safety margin. Antireflux surgeries are gaining more popularity and awareness and laparoscopic Nissen-Rossetti fundoplication is a safe and effective method of performing them. Our case series of 25 patients who underwent day care laparoscopic Nissen-Rossetti fundoplication done over a period of 3 years suggests the feasibility and safety of performing day care antireflux surgeries with no complications. Surgical outcomes of procedure are unaffected and the main challenge faced remains pain relief and which can be effectively tackled by local blocks or plain nonsteroidal anti-inflammatory drugs (NSAIDs). We encourage more studies in this regard with appropriate blinding to enforce its possibility as day care surgery and help patients with early recovery and decreasing cost of surgeries.

**Keywords:** Day care surgery, Gastroesophageal reflux disease, Laparoscopic Nissen-Rossetti fundoplication, Transversus abdominis plane block.

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## INTRODUCTION

Antireflux problems and gastroesophageal reflux disease (GERD) have become common in the present day practice. The complications associated with GERD like stricture esophagus, adenocarcinoma of the esophagogastric junction (OGJ), pulmonary complications, etc. have prompted clinicians to adopt both medical and surgical options to treat this condition.<sup>1-4</sup> Proton pump inhibitors (PPIs) have been the mainstay of treatment in this condition and their usage can be up to 6 months continuously.

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pH measurement and esophageal manometry have also been supplemented by the Hill's grading system of GERD based on endoscopy to assess the severity of the disease.<sup>5</sup> Many studies have suggested that laparoscopic fundoplication is the most effective treatment in the long-term management of GERD.<sup>6</sup>

Laparoscopic Nissen-Rossetti fundoplication involves performing the fundic wrap after ensuring an adequate length of intra-abdominal esophagus, approximation of the crural hiatus and accentuation of the angle of His. This differs from the usual Nissen fundoplication by not having to divide the short gastric vessels along the gastrosplenic ligament. Thus, the procedure has an added advantage of decreasing operating time and minimizing intraoperative and postoperative blood loss.<sup>7</sup>

In the present article, we present 25 cases of GERD who underwent the laparoscopic Nissen-Rossetti fundoplication at our center during a period of around 3 years from 2012 to 2015 as a day care procedure (<24 hours stay). We would like to highlight the possibility of day care antireflux surgery using laparoscopic Nissen-Rossetti fundoplication.

## MATERIALS AND METHODS

For the period in observation, the following cases were selected for the day care fundoplication:

- Patients with GERD symptoms of more than 6 months duration
- Treatment given with PPIs for more than a month and patients being unresponsive to treatment
- Gastroesophageal reflux disease classification grade 3 to 4 based on Hill's system of classification of GERD using endoscopy
- Patients with American Society of Anesthesiologists (ASA) 1 to 2 fitness for surgery
- Patients consenting for the surgery as the choice of treatment for GERD.

Following patients were not selected for the day care procedure and underwent further evaluation or alternative treatment protocol:

- Patients unwilling for surgery as the choice of treatment for GERD
- Gastroesophageal reflux disease classification grade 1 to 2 based on Hill's system of classification of GERD using endoscopy

- Co-existent conditions like peptic ulcer disease or cholelithiasis as the causes for dyspepsia along with GERD symptoms
- Patient unfit for surgery.

## OBSERVATIONS

Following were the observations seen in the patient group:

- Total no. of cases—25
- Duration—2012 to 2015
- Study—retrospective analysis
- Center—single center and same team of surgeon, co-surgeon, and anesthetist
- Age of patients—from 25 to 65 years
- Sex of patients—predominantly females.

The patients once diagnosed were asked to undergo anesthesia fitness evaluation prior to surgery. Once fit for surgery, the patients were asked to come to the hospital early in the morning of the surgery on an empty stomach since the previous night after a short meal. The surgery was done within 2 to 3 hours of the admission.

The choice of procedure was laparoscopic Nissen-Rossetti fundoplication under general anesthesia and the procedure duration varied from 60 to 90 minutes. Postoperatively the patient was given pain relief by transversus abdominis plane (TAP) block intraoperative with sensorcaine (0.25%) and by nonsteroidal anti-inflammatory drugs (NSAIDs) like diclofenac sodium postoperative on a *si omni sit* (SOS) basis.<sup>8,9</sup> A pain score was chosen to subjectively assess the postoperative pain as a choice for the analgesia (>4). Postoperatively after 6 hours of surgery liquids were initiated to the patient and they were given liberally after an hour of tolerating the same. The patient was discharged for follow-up after having liquids.

Patients on follow-up day 3 were advised semisolid food and on day 7 were given soft diet. On day 7, the sutures were removed. Patient was given a choice of discharge in every instance and plan was to avoid discharge if the patient did not feel comfortable going home or if the pain was high.

Our observations during the postoperative period were as follows:

1. Average stay of patient in the hospital—12 to 16 hours
2. Postoperative pain score:
  - Score 1–4 20
  - Score 5–8 4
  - Score >8 1

All patients responded to oral NSAIDs if the pain score was high.

All the patients were willing for discharge postoperatively.

3. Postoperative complications:
  - Postoperative dysphagia/odynophagia 0
  - Postoperative bleeding 0
  - Postoperative respiratory complications 0
  - Postoperative wound complications 0
  - Postoperative complications unrelated to above 0
  - Readmission 0
  - Postoperative gas bloating symptoms 0
4. Follow-up relief in symptoms—100%

Our observations indicate that with a proper selection criterion, laparoscopic Nissen-Rossetti fundoplication can be offered as antireflux therapy to the patient as a day care procedure.

Laparoscopic Nissen-Rossetti fundoplication does not involve dividing the short gastric vessels, and thus allows a faster surgery with minimal bleeding. The fundic wrap is fashioned in a careful manner after creating a wide retroesophageal tunnel and ensuring that the wrap is not tight at all. Postoperative dysphagia, bleeding, gas bloating, etc. are usually not encountered but the patient is kept on a liquid diet for 3 days to allow the inflammation to subside along the wrap and prevent any discomfort to swallowing. Pain was the main challenge in the early discharge and was assessed using the pain score and it was found that patients usually were comfortable postoperatively with adequate local infiltration in the muscle planes during surgery at the port sites and also with one or two doses of NSAIDs like diclofenac sodium or paracetamol. None of the patients required readmission or felt the need to stay longer.

## DISCUSSION

A 360° fundoplication is the most common treatment for GERD presently especially for both acid and bile reflux in patients who respond poorly to the proton pump inhibitors. Even regression of Barrett's metaplasia after surgery has become the interest for physicians to advocate the procedure.<sup>10</sup>

Few papers have been published regarding the feasibility of laparoscopic Nissen fundoplication in day care setting and fewer are double cohort studies in this regard.<sup>11-13</sup>

Day care fundoplication was taken into consideration and the discharge criteria according to the postanesthesia discharge score system were: <20% deviation of pulse and blood pressure compared with preoperative values, balanced gait without dizziness, pain acceptable and pain regulated with oral analgesics, no excessive nausea and vomiting and minimal blood loss.<sup>14</sup> Other quality of life assessors were the EQ-5D—a simple questionnaire based on five dimensions: mobility, self-care, usual activity,

pain/discomfort, and anxiety/depression. Thus, highlighting that an approach toward day care fundoplication had begun whilst the possibility of day care cholecystectomy had already become evident and been brought into practice.

Simple acceptances of a procedure to be performed as day care needs to have no increased morbidity and mortality compared to in-patient procedure, high success rate of same day discharge and satisfied patients. Good pain relief can be brought in by local infiltration of the diaphragm as well as port site wounds supplemented by NSAIDs or likewise.<sup>14</sup>

Recently, new interventions to treat GERD have been developed like the magnetic sphincter positioned around the distal esophagus laparoscopically.<sup>15</sup> Here postoperative pain is almost negligible since the dissection is minimal. Thus, pain relief becomes a major criterion for deciding the feasibility of the surgical procedure to be considered as a day care procedure.

The Nissen-Rossetti fundoplication differs from the usual Nissen fundoplication in not having to divide the short gastric vessels during the fundic wrap creation. All the other operative steps are similar. This reduces the operative time and also decreases the blood loss in the surgery. In normal individuals this would even add to decreased postoperative pain since the dissection is less than the Nissen fundoplication procedure. The De Meester score postoperatively for the result of the procedure can assess the efficacy of the procedure. Symptomatic relief does remain the single best criteria for the outcome analysis of the procedure.<sup>16</sup>

Cost factor analysis also highlights the importance of choosing to perform the procedure in day care setting. Older concepts have changed when now the nasogastric tube is avoided in postoperative setting and early alimentation is also initiated for the patients. In elective setting of a clean surgery even prophylactic antibiotics are enough not necessitating long hospitalizations in view of medication administration or for parenteral alimentation. Pain relief and patient satisfaction remain the sole indices for the choice of continuing admission of the patient *vs* the day care procedure.

Dysphagia or odynophagia was another problem worrying the physician preventing early discharge of the patient. The procedure, differs in choosing the anterior or posterior gastric wall for the fundoplication. However, the dysphagia after the procedure did not differ in the choice of procedure and thus there was no harm done to the patient in choosing the Nissen-Rossetti procedure for the treatment of GERD for the patient. Other studies have also proposed that division of short gastric vessels is not necessary to perform a 'short and floppy' plication.<sup>17</sup>

## CONCLUSION

Laparoscopic Nissen-Rossetti fundoplication is effective for the treatment of GERD with severe grade or symptoms. It can be offered to the patient as day care procedure also but with proper selection criteria. More studies can be done prospectively and with appropriate blinding to prove the efficacy of this procedure as a day care option for antireflux surgery.

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