

## **Laparoscopic Vagotomy: Feasible Option for the Chronic Peptic Ulcer Patient**

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**Background:** Highly selective vagotomy was developed to avoid dumping syndrome, diarrhea, bile reflux, and poor gastric emptying; the idea was to avoid vagal denervation of viscera other than the parietal cell mass.

**Objective:** Preliminary review of the cases which underwent laparoscopic highly selective vagotomy.

**Design:** Retrospective study.

**Setting:** Surgical department, Salmaniya Medical Complex, Bahrain.

**Method:** Cases of laparoscopic surgery for chronic peptic ulcer disease were retrospectively reviewed through their records from 1<sup>st</sup> January 1997 to 31<sup>st</sup> December 2003. Data were obtained about personal characteristics, operative time, complications and length of hospital stay.

**Result:** The average age of these patients was 44.9 years, ranging from 33 to 64 years. Nine patients were males and two patients were females. Five patients had laparoscopic highly selective vagotomy. There were no immediate postoperative complications in this group. The average length of hospital stay was 7.8 days ranging from 3-17days. Five patients had laparoscopic truncal vagotomy with open pyloroplasty. The complications reported in this group were a case of intestinal obstruction and another case of persistent symptoms. The average length of hospital stay was 16 days, ranging from 6 to 46 days. One patient underwent laparoscopic truncal vagotomy with gastro-jejunostomy due to gastric outlet obstruction. The patient had intestinal obstruction postoperatively.

**Conclusion:** Laparoscopic highly selective vagotomy has a significantly lower complication rate than other laparoscopic surgeries for chronic peptic ulcer disease, which makes it a feasible option. However, the hospital stay for these surgeries are higher than reported studies which hinders its cost-effectiveness.

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Peptic ulcer disease has been managed well with the advent of H<sub>2</sub>-antagonist medical therapy. In addition, by eradicating *Helicobacter Pylori* with triple antibiotic therapy, many patients had their symptoms alleviated. However, there are more complicated cases that have a chronic course, where surgery plays an important role in the treatment, progression of the disease and its complications<sup>1</sup>.

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The indications for surgical intervention are intractable chronic peptic ulcer disease resistant to optimal medical therapy, duodenal ulcer bleeding and pyloric stenosis<sup>2</sup>. Highly selective vagotomy will decrease the sensitivity of the parietal cells to stimulation and the release of acid and avoids the undesired effect of delayed gastric emptying which necessitates a drainage procedure<sup>3</sup>. This procedure can be done laparoscopically which makes it minimally invasive.

Although both vagotomy with antrectomy and vagotomy with pyloroplasty drainage can manage duodenal ulcers, they are associated with several complications, including dumping syndrome, diarrhea, bile reflux, and poor gastric emptying. Highly selective vagotomy was developed to avoid these complications; the idea was to avoid vagal denervation of viscera other than the parietal cell mass while keeping the pylorus mechanically and functionally intact. This procedure was found to reduce postvagotomy diarrhea and dumping dramatically<sup>4</sup>.

This retrospective study reviews the cases of laparoscopic highly selective vagotomies and complications associated with this procedure.

## **METHOD**

Cases of laparoscopic surgery for chronic peptic ulcer disease were retrospectively reviewed through their records from 1<sup>st</sup> January 1997 to 31<sup>st</sup> December 2003. Data were obtained about personal characteristics, operative time, complications and length of hospital stay.

## **RESULT**

Eleven patients had laparoscopic surgery for chronic peptic ulcer disease during the study period. The types of surgery included laparoscopic highly selective vagotomy, laparoscopic truncal vagotomy with open pyloroplasty and laparoscopic truncal vagotomy with gastro-jejunostomy. The average age of these patients was 44.9 years, ranging from 33 to 64 years. Nine patients were males and two patients were females. The indications for surgery were: Four patients had chronic pain, one had pyloric stenosis, four had both chronic pain with pyloric stenosis and two had bleeding.

Five patients had laparoscopic highly selective vagotomy. Four cases were suffering from persistent symptoms and one had bleeding. The mean operative time was 165 minutes, ranging from 115 to 240 minutes. There were no immediate postoperative complications in this group. The average length of hospital stay was 7.8 days ranging from 3-17days.

Five patients had laparoscopic truncal vagotomy with open pyloroplasty. Four patients presented with pyloric stenosis and one had bleeding. The mean operative time was 149 minutes, ranging from 110 to 210 minutes. The complications reported in this group were a case of intestinal obstruction and another case of persistent symptoms. The average length of hospital stay was 16 days, ranging from 6 to 46 days.

One patient underwent laparoscopic truncal vagotomy with gastro-jejunostomy due to gastric outlet obstruction. The procedure took 180 minutes. The patient had intestinal obstruction post-operatively. His length of hospitalization was 42 days. None of the patients was converted to open method.

## DISCUSSION

Surgical therapy is reserved for the chronic complicated peptic ulcer disease patient who persists to have symptoms regardless of the effective medical therapy. Laparoscopic surgery for chronic peptic ulcers can significantly reduce the hypersecretion of acid through a minimally invasive technique. With laparoscopic highly selective vagotomy, the complications attributed to vagotomy such as delayed gastric emptying and dumping syndrome can be avoided<sup>4</sup>.

In the laparoscopic highly selective vagotomy group, there were no postoperative complications seen. This result was comparable with the result found in a small study from Univeriste Libre de Bruxelles, Belgium; thirty-three patients were operated through laparoscopic highly selective vagotomy and none had any morbidity or mortality<sup>5</sup>. Another larger study reported six complications: four perforations of gastric fundus and two bleeding episodes. Conversion to open surgery was done in four cases<sup>6</sup>.

However, in this study, for the laparoscopic truncal vagotomy with open pyloroplasty group, two patients had complications (40%). One case of laparoscopic truncal vagotomy with gastro-jejunostomy had post-operative intestinal obstruction. The difference between the two groups was significant. There have been studies advocating laparoscopic truncal vagotomy with open pyloroplasty for bleeding ulcers; they had no postoperative complications<sup>7</sup>.

The length of hospitalization was significantly longer in this study compared to the literature. The average length for laparoscopic highly selective vagotomy was 7.8 days and for laparoscopic truncal vagotomy with open pyloroplasty was 16 days. Most studies report 1-3 days for hospitalization of patients undergoing laparoscopic highly selective vagotomy<sup>5,6,8</sup>.

This study consists of a small number of patients but gives a preliminary reflection on the effectiveness of laparoscopic surgery for chronic peptic ulcer disease.

## CONCLUSION

**Laparoscopic highly selective vagotomy has a significantly lower complication rate than other laparoscopic surgeries for chronic peptic ulcer disease, which makes it a feasible option. However, the hospital stay for these surgeries is longer than reported studies which compromises its cost-effectiveness.**

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