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Comparative Study of Laparoscopic and Open Repair of Duodenal Ulcer Perforation

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Abstract
Aim: *to compare the effectiveness and postoperative outcomes of laparoscopic and open repair of duodenal ulcer perforation.*
Methods : *This study included 50 patients with duodenal perforation, 20 had laparoscopic repair and 30 patients had conventional open repair. Patients in both groups were compared for effectiveness and post-operative complications Patient admitted were clinically evaluated.preoperative and postoperative findings,post operative complications were meticulously recorded as per protocol. The following parameters were recorded-the duration of surgery,analgesic requirement,hospital stay,time to resume orals,postoperative complication and time to return to normal activity.*
Results: *Age of patients of both open and laparoscopic groups ranged between 14 to 70 years, with a mean age of 41.86 yrs in the open group and 48.04 yrs in the laparoscopic group.The difference was not statistically significant as the p-value by student's t-test was 0.656.Majority of patients were male, with male to female ratio in the open is 2.8:1 and in lap is 2.2: Duration of symptoms ranged from 1 to 4 days in both groups, with a mean duration of 1.5610.86 days in the open group and 1.95+1.1 days in the laparoscopic group. The mean skin to skin time was 96.41 minutes in the open group and 113.91 minutes in the lap group.The patients in the laparoscopy group needed injectable analgesics for a significantly less duration than those in the open group.Patients in the lap group were able to move about in the ward earlier than those in the open group.Patients in the lap group were able to tolerate orals earlier than those in the open group.Patients in the Lap group needed a mean hospital stay of 8.6 days, where those in the open group needed 10.5 days. The difference was statistically significant favouring the Lap group with shorter hospital stay.Patients in open group had significantly higher rates of wound infection. There was no significant difference between both groups in terms of other complications like fever, intraperitoneal collection, pulmonary infection and prolonged ileus. There was one death in open group. 3 patients in each group had intraperitoneal collections, they were treated conservatively and by USG guided aspiration of the collection*
Conclusion: *This study showed time to resume normal dict, analgesic requirement, duration of hospital stay and time to return to normal activity were significantly lower in the laparoscopy group.Complications related to intraperitoneal collections were nil in both groups during the follow-up period.Laparoscopic repair of duodenal ulcer perforation is as safe and effective as open repair, has the advantages of less wound related complications, early recovery and return to normal activit*

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I. Introduction

Duodenal ulcer perforation is one of the common complications of peptic ulcer disease despite the use of various anti ulcer agents.it is one of the most common cause of admission in emergency surgical department.the etiologies include H.pylori infection,chronic NSAID intake,smoking,chronic alcoholic ,ingestion of smoked foods.perforation and peritonitis is a threat to life and it needs emergency surgical intervention.The conventional open technique includes perforation closure and peritoneal lavage but has the disadvantage of large abdominal incision,wound infection ,wound dehiscence,prolonged hospital stay and late complication such as incisional hernia.laparoscopic repair has the advantages over the conventional repair in terms of shorter hospital stay,,no larger incision etc.this study compares these two techniques in their effectiveness.

II. Materials And Method

Aim AND OBJECTIVE:

To compare the effectiveness and postoperative outcomes of laparoscopic and open repair of duodenal ulcer perforation.It compares the duration of surgery,analgesic requirement,hospital stay,postoperative complication and time to return to normal activity.

STUDY AREA :

Government Rajaji hospital,Madurai .

INCLUSION CRITERIA:

All patients with duodenal ulcer perforation undergoing emergency surgery.

EXCLUSION CRITERIA:

Patient with shock
Gastric perforation
Perforation size more than 15mm
Lap to open conversion

STUDY PERIOD:

From March 2015 to August 2015

SAMPLE SIZE:

50. 30 were treated by open repair .20 were treated by laparoscopic method.

STUDY DESIGN:

Prospective study

III. Methods:

In both the groups a detailed clinical history regarding age, sex, occupation, clinical presentation, symptoms, past history of chronic duodenal ulcer was obtained once the patient was stabilized.All patients had an X-ray erect abdomen, USG abdomen to confirm the diagnosis. A nasogastric tube and Foleys catheter were placed. A dose of prophylactic antibiotic was given 30 minutes before surgery.Patients underwent emergency surgery after preoperative assessment, for definitive diagnosis, closure of perforation and peritoneal toilet Laparoscopic or open surgery was performed upon obtaining informed consent from the patient.All patients were started on IV antibiotics for a minimum of 5 days. All patients were placed on injectable analgesics, tapered as they recovered. All patients were starts on proton pump inhibitors. Nasogastric tube was placed, continuous drainage was done till the secretions were less than 150 ml in 24 hrs. Patients were allowed to take liquid diet once the bowel sounds returned. Solid diet was allowed as the patient tolerated. Abdominal drains were monitored and removed when collection was less than 50 ml in 24 hrs. Patients were encouraged to move about, as their condition allowed. Patients were monitored for fever, post operative complications, respiratory infection. Patients were discharged once they were free of post-operative complications, able to move comfortably and the sutures healed. Patients were prescribed 3 drug anti-H pylori regimen at the discharge and were advised to come for follow up at 2 weeks, 1 month and 3 months from discharge.The patients in the laparoscopic and the open group were studied for:Duration of surgery,Analgesia required (number of days parenteral analgesics were required),Time to resume orals ,Time to mobilise the patient,Fever, Wound infection, Wound dehiscence,Bile leak,Intraperitoneal collection,Prolonged ileus,Respiratory infection,Duration of hospital stay.

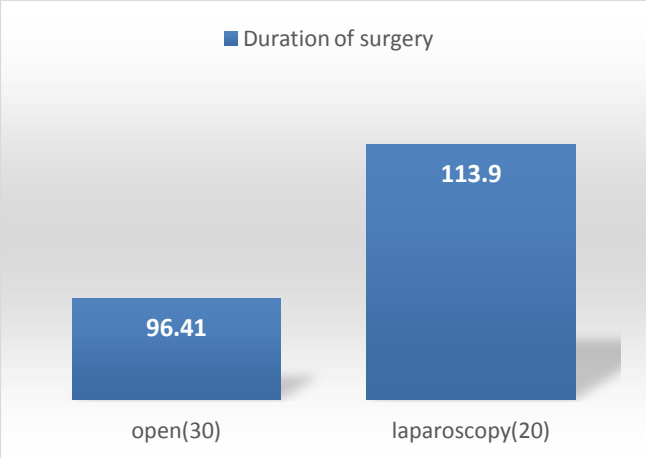
IV. Results

Age of patients of both open and laparoscopic groups ranged between 14 to 70 years, with a mean age of 41.86 yrs in the open group and 48.04 yrs in the laparoscopic group.The difference was not statistically significant as the p-value by student's t-test was 0.656.Majority of patients were male, with male to female ratio in the open is 2.8:1 and in lap is 2.2: Duration of symptoms ranged from 1 to 4 days in both groups, witha mean duration of 1.5610.86 days in the open group and 1.95+1.1 days in the laparoscopic group. There was no statistical significance as the p value was 0.146.The size of ulcer perforation in the open group was a mean of 5.39 mm and that of the lap group was 5.95 mm. The mean skin to skin time was 96.41 minutes in the open group and 113.91 minutes in the lap group. The difference was statistically significant with a p-value of 0.0083. The lap group had longer

patients in the open group needed NG tube for a mean of 3.43+0.65 days and those in the lap group for 3+0.6 days. The difference was significant with a p. value of 0.008.The patients in the open group needed intravenous fluids for a mean of 4.17+0.52 days and those in the lap group for 3.4710.66 days, the difference was significant favouring the lap group.The patients in the laparoscopy group needed injectable analgesics for a significantly less duration than those in the open group.Patients in the lap group were able to move about in the ward earlier than those in the open group.Patients in the lap group were able to tolerate orals earlier than those in

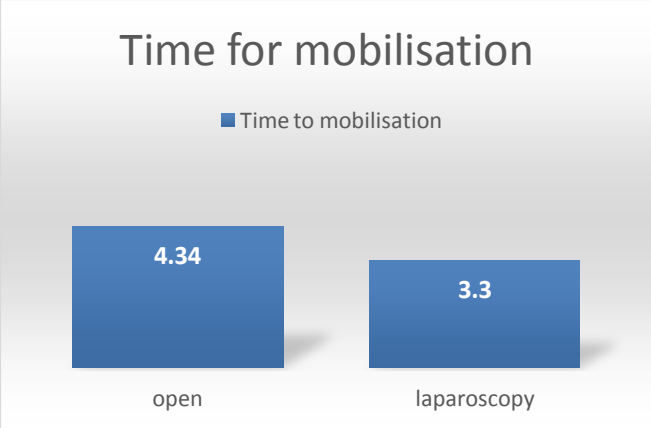
the open group.Patients in the Lap group needed a mean hospital stay of 8.6 days, where those in the open group needed 10.5 days. The difference was statistically significant favouring the Lap group with shorter hospital stay.

Patients in open group had significantly higher rates of wound infection. There was no significant difference between both groups in terms of other complications like fever, intraperitoneal collection, pulmonary infection and prolonged ileus. There was one death in open group. 3 patients in each group had intraperitoneal collections, they were treated conservatively and by USG guided aspiration of the collection



Duration of sx	Open-30	Lap-20
Mean	96.41	113.9
SD	13.4	12.8
P value	<0.001 significant	

Picture depicts the duration of surgery in both the groups.



Time for mobilisation	Open-30	Lap-20
Mean	4.34	3.30
SD	0.62	0.70
P value	<0.001 significant	

Picture depicting time for mobilisation

Follow up:

There was one death in open group. The patients in each group were followed up for a maximum of 3 months, 5 patients from the open group and 3 from the lap group did not come for follow up. 14 patients in the open group and none in the lap group had pain at the suture site during the follow up. 2 patients from the open group developed incisional hernia. None of the patients had complications due to intraperitoneal collections or adhesions.

V. Discussion

In this study conducted in Govt Rajaji hospital, Madurai ,There was no significant difference in duration of symptoms, mean age, ASA grade and mean perforation size.Major disadvantage of laparoscopic repair is that specific training in laparoscopic Suturing technique is needed and this handling is associated with surgeon's experience. Only efforts in learning practice of laparoscopy offer shorter operative time and patient's safety. In addition. there are different methods of ulcer closure introduced other than suturing, such as gelatine sponge and fibrin glue and stapled omental patch repair. These methods are easier to perform and contribute to shorten operative time.Analgesic requirement was significantly lower in the laparoscopy group (3.39+0.58 vs 4.84+0.66 days). Wound pain at follow up was also significantly lower.Patients who underwent laparoscopic repair were enabled to be discharged significantly earlier 10.5+3.9 days.We found that laparoscopic repair did result in earlier return to normal diet (4.26+0.81 vs. 4.87+0.86 days). Time required for mobilisation of patients was also significantly lower (3.310.7 vs 4.34 0.62 days). Early return to work after laparoscopic surgery for perforated peptic ulcer offsets the cost incurred in performing laparoscopic repair.The main concern previously was that whether the peritoneal lavage in laparoscopic method was adequate. Many reports about laparoscopic treatment have shown that peritoneal lavage can be done effectively and perforation can be cured safely. It is

beyond doubt laparoscopy offers better cosmetic results. Moreover, it is also shown that fewer postoperative complications, such as wound infection and wound pain, occur in laparoscopy patients. However, the number of complications in laparoscopic surgery was small compared with open group. Therefore, laparoscopic method is now an option chosen by many surgeons which avoids wound complications and allows easier and more comprehensive cleansing of the entire peritoneal cavity.Laparoscopic repair can be as effective as open method in treatment of perforated peptic ulcer but there are still limitations. First of all, laparoscopic simple closure is not available in all hospitals especially primary hospital centre.Previous studies have shown a suture leak rate of 7% with laparoscopic repair. however, we demonstrated that this can be completely abotished and can be superior to open surgery, for which a leak rate of 0% has been reported. Omentopexy can be used reinforce the sutures Newer methods like use of biodegradable patch for closure of perforation need further studies.

VI. Conclusion

This study included 50 patients with duodenal perforation, 20 had laparoscopic repair and 30 patients had conventional open repair. Patients in both groups were compared for effectiveness and post-operative complications.This study showed significantly longer operation time in the laparoscopy group. Post-operative complications like wound infection and wound pain were significantly higher in the open group whereas there was no significant difference in post-operative fever, respiratory infections, prolonged ileus and intra-peritoneal collections.Time to resume normal dict, analgesic requirement, duration of hospital stay and time to return to normal activity were significantly lower in the laparoscopy group.Complications related to intraperitoneal collections were nil in both groups during the follow-up period. Further studies are still needed to compare the late follow-up results.Laparoscopic repair of duodenal ulcer perforation is as safe and effective as open repair, has the advantages of less wound related complications, early recovery and return to normal activity.

Bibliography

[1]. Primrose J. Underwood T. Stomach and duodenum. In: Williams N. Bu C, O'Connell P,ed. by. Bailey and Love's Short Practice of Surgery. 26th ed. 2013, p. 1032-45.
[2]. Malvi D. Krantz S. Peptic ulcer disease. In: Townsend C. Beauchamp R. ed. By.
[3]. Sabiston Textbook Of Surgery. 19th ed. Elsvier Saunders, 2012. p. 1193-1200. 3. Broderick T, Matthews J. Ulcer Complications. In: Zinner M. Ashley 5, ed. by.
[4]. Maingot's Abdominal Operations, 11th ed. 2007, p. 353-370.
[5]. Winkleman B, UsatU A, Ellison C. Duodenal Ulcer. In: Cameron J. ed. by.Current Surgical Therapy. 9th ed. 2008.
[6]. Schein M. Perforated Peptic Ulcer. Schein's common sense emergency abdominalsurgery. 2nd ed. Springer Berlin Heidelberg: 2005, p. 143-50.
[7]. Wangensteen, 0. Non-operative treatment of localized perforations of the duodenum Proc Minn Acad Med. 1935; (18):477-480
[8]. Taylor H. Perforated peptic ulcer treated without operation. Lancet. 1946:2:441-4.
[9]. Bhattacharya K. Peptic ulcer surgery A historical review, gastroenterology today2002:6:38-40.83
[10]. Marshall B. Warren J, Unidentified curved bacilli in the stomach of patients with gastritis and peptic ulceration. The Lancet. 1984;323(8390):1311--1315.

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