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A Comparison Between Graham's Omentopexy and Modified-Graham's Omentopexy in Management of Perforated Duodenal Ulcers

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Abstract
A gastric ulcer perforation is an emergency that has to be surgically treated right away. The prevalence of emergency surgeries is increasing despite the uncommon occurrence of planned surgery for duodenal ulcers. Using the basic randomization procedure, the patients were split into two groups of forty-five each. Patients were divided into A and B groups. Mean operating time, intraoperative and postoperative mortality within 30 days, bile leak development, septicemia, intra-abdominal abscess, wound infection, burst abdomen and lung complications, oral feeding starting on the day of surgery length of hospital stay were used to compare the results. There were 76 men and 14 women among the 90 patients. According to the data, 45 patients-37 men and 8 women-had undergone GO and 40 men and 5 women-had received MGO procedure. The majority of the holes measured between 0.6 and 1 cm. In terms of morbidity and mortality, Graham's patch repair is just as effective as modified-Graham's patch repair. For repairs, there is no statistically significant difference between the two procedures.

INTRODUCTION

The general fatality rate for peptic ulcer perforation is 10%, however other authors have recorded rates as high as 20%. As a result, choosing the best surgical method becomes crucial for surgeons[1]. Complex Peptic Ulcers: Various surgical techniques have been developed to treat them. When treating a duodenal ulcer rupture in an emergency, ometopexy is often used. Cellen Jones initially described omentopexy in 1929 Graham revised it in 1937[2]. Direct and indirect omentopexy are the two guiding concepts of the surgical techniques used for omental patching[3]. Duodenal perforations have been treated using a variety of intricate techniques. These include converting the hole into a pyloroplasty, resecting the perforation carrying the duodenum and gastric antrum in a partial gasterectomy, or closing the perforation with a jejunal serosal patch or jejunal pedicle. These procedures may not be desirable or feasible for patients who present with unstable hemodynamics because each of the aforementioned options requires a high level of surgical expertise and facilities, which may not be available in an emergency situation, in addition to lengthening the surgical time[4]. Numerous procedures have been suggested to make up for tissue loss and duodenal perforation. None seem to be the greatest way to solve the issue or have received widespread approval. Duodenal mucosa's propensity to push through closures, contributing to leakage, high intraluminal pressure disintegration by pancreatic and biliary autodigestive enzymes are the causes given for the disruption of duodenal closures. One of the most dangerous outcomes of a peptic ulcer is perforation. Even with today's advancements in anaesthesia, surgery auxiliary facilities, the situation still poses a serious risk to life. A range of surgical approaches have been recommended to treat peptic perforation. Nevertheless, there are disadvantages to these methods, particularly when it comes to addressing big perforations, delayed presentation, senior age, etc. Standard approaches have been known to result in up to 18% fatality rates in patients with risk factors. Therefore, it's necessary to identify, assess implement disaster management strategies. Nonetheless, in order to stop the effects of peritoneal contamination in patients who are critically ill, it is normal to execute simple closure of the perforation rather than final therapy with truncal vagotomy and drainage operations or proximal gastric vagotomy. In order to publish his findings, Roscoe Graham placed three sutures, covered them with a piece of free omentum knotted them (without attempting to close the hole at the main level)[5].

The main goal of the modifications was to seal the hole and maintain the omentum between two layers of knots in an attempt to stop it from leaking again, which was the main issue with Graham's method[6].

Closing the hole using a Graham's patch utilising omentum may be a more judicious course of action in patients with duodenal perforation who present with unstable hemodynamics and substantial peritoneal contamination. For some individuals, this Graham's patch is still applicable and helpful in emergency surgery for perforated peptic ulcers[7].

MATERIALS AND METHODS

Ninety instances of perforated chronic duodenal ulcers were included in the investigation. The selection of cases was based on a comprehensive history, clinical examination, radiological evidence indicating a chronic duodenal ulcer perforation having had surgical therapy. Documentation was kept of the patient's comorbidities, presenting symptoms, vital signs, test results diagnostic procedures.

During their hospital stay, every patient was provided with intravenous fluids, antibiotics, nasogastric aspirations prompt vital sign monitoring until surgery was performed. Before any of the patients were brought in for surgery, stable hemodynamics and good urine output were guaranteed.

Age, sex, socioeconomic status, history of acid peptic disease, smoking, drinking, chewing tobacco, using ulcerogenic drugs, symptoms, signs, findings from chest radiography, findings from ultrasonography abdomen, day of presentation, presence of shock at presentation, chest condition laboratory investigations (haemoglobin concentration) were among the information gathered about the patient profile.

Using the basic randomization procedure, the patients were split into two groups of forty-five each. Patients were divided into A and B groups. Mean operating time, intraoperative and postoperative mortality within 30 days, bile leak development, septicemia, intra-abdominal abscess, wound infection, burst abdomen and lung complications, oral feeding starting on the day of surgery length of hospital stay were used to compare the results.

RESULTS AND DISCUSSIONS

There were 76 men and 14 women among the 90 patients. According to the data, 45 patients-37 men and 8 women-had undergone GO 40 men and 5 women-had received MGO procedure. The majority of the holes measured between 0.6 and 1 cm. (Table 1).

The mean operating time, intraoperative and postoperative mortality within 30 days, bile leak development, septicemia, intraabdominal abscess, wound infection, paralytic ileus, burst abdomen and lung complications, oral feeding initiation from the day of surgery, length of hospital stay need for reoperation were all compared between the two groups. Twelve (26.6%) cases of wound infection, three (8.8%) cases of biliary leakage, three (8.8%) cases of intra-abdominal

Table 1: Analysis of data (preoperative and intraoperative) in perforated duodenal ulcers

Factors	n (%)
Age of the patients (years) 20-29	11 (12.2)
30-39	33 (36.6)
40-49	22 (24.4)
50-59	11 (12.2)
>60	13 (14.4)
Sex	
Male	76 (84.4)
Female	14 (15.5)
Time interval between onset of symptom and operation (h)	
<24	28 (31.1)
>24	52 (57.7)
Size of duodenal perforation (cm)	
<0.5	13 (14.4)
0.6-1	52 (57.7)
>1	25 (27.7)
Concurrent medical diseases	
Present	26 (28.8)
Absent	59 (65.5)
Preoperative shock	
Present	13 (14.4)
Absent	77 (85.5)

Table 2: Outcomes of both techniques

Outcomes	Graham's omentopexy (n = 45) [n (%)]	Modified-Graham's omentopexy (n = 45) [n (%)]	P-value
Mean operative time (min)	73.1±9.40	76.1±11.32	0.426 (NS)
Bile leak/fistula	4 (8.8)	0 (0.0)	0.596 (NS)
Wound infection	12 (26.6)	10 (22.2)	<0.04*
Wound dehiscence	4 (8.8)	2 (4.4)	<0.04*
Pneumonia	4 (8.8)	3 (6.6)	0.376 (NS)
Paralytic ileus	2 (4.4)	2 (4.4)	1
Septic shock	3 (6.6)	3 (6.6)	1
Abdominal abscess	4 (8.8)	0 (0.0)	<0.03*
Mean hospital stay (days)	12.4±2.91	10.4±2.53	<0.01*
Commencement of oral feed (mean days)	5.2±0.99	4.4±0.83	0.266 (NS)
Reoperation	3 (6.6)	0 (0.0)	<0.03*
Death	3 (6.6)	2 (4.4)	0.266 (NS)

*P<0.05, significant.

abscesses two (6.6%) cases of death were the postoperative complications in group A (GO). In group B (MGO), on the other hand, wound infection was noted in nine (22.2%) cases, but there was no evidence of biliary leakage or intra-abdominal abscess. In group B, there was a single fatality (4.4%). Group A spent 11.6 days in the hospital, whereas Group B spent 9.7 days there. Table 2 displays the postoperative complications for both procedures. Following Fisher's exact test analysis, the data were determined to be statistically significant, with a P<0.0001.

In addition to lessening the chance of severing the sutures used to close perforations, the use of vascularized pedicled omentum promotes neovascularization, which quickens ulcer healing[8]. Releakage is caused by a number of causes, including high intragastric pressure, the duodenal mucosa's propensity to protrude beyond the suture line the autodigestive enzymes of the pancreas and bile. Therefore, further study is required to standardise the Choic process[9]. Pedicled omentoplasty is being replaced, according to a number of experimental trials, by applying a bonded patch made of biodegradable material to the outside of the peptic hole. By applying the patch, important operating time is saved by avoiding the suturing of the friable borders of the peptic hole[10]. It's unclear from previously published experiments if MGO performs worse or better than GO[11]. The current study's mortality rate falls between 2.5-5.0%, which is different from previous literatures' range of 6.5-20%[12]. Similar to previous research, the mean hospital stay in the current study was 11.6 days for the GO group and 9.70 days for the MGO group.11 The main goal of the MGO is to close the perforation. In order to secure the omentum and enable sealing of the perforation, the applied tension to the sutures should be strong enough to stabilise the omentum in place but loose enough to preserve the omental blood supply. This means that the ligature should not be too tight to cause tissue damage or too loose to have recurrence. The risk of the suture line failing is significant if the omental patch becomes strangulated due to increasing stress on the knots[12].

Many surgeons have believed that morbidity and death might be significantly decreased if patients could be operated on early during their attacks. Preoperative shock, concurrent disorders hospital admission delays are the main variables endangering the result. Early admission, sufficient resuscitation, management of concurrent conditions prompt surgical intervention are thus critical[13].

The tiny sample size of this research is one of its shortcomings. The debate over GO vs MGO requires additional research with more instances in order to assess and implement an appropriate strategy for handling this severe emergency.

CONCLUSION

Our findings suggest that in terms of morbidity and mortality, Graham's patch repair and modified-Graham's patch repair are equally beneficial. MGO is still a medication with significant side effects, even though it is used extensively. It is still unclear if MGO has any further advantages than GO. It makes no statistically significant difference whatever repair approach is used. The minimal number of patients randomised in this trial may be the reason for the failure to demonstrate a meaningful difference. The surgeon's preference determines whether is better, GO or MGO.

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