

## “Comparison of Surgical Techniques for Gastro Duodenal Perforation Closure: A Prospective Study of Falciformligament Patch Versus Graham Omental Patch”

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### Abstract

#### Introduction

Perforation leak chances are more when we use an unhealthy omentum for perforation closure. In cases of perforation peritonitis presenting after 6 hours omentum would not be healthy, in such cases we can make use of falciform ligament for perforation closure

**Aims And Objectives:** To study the surgical techniques of gastroduodenal perforation closure 2. To evaluate the use of falciform ligament as an alternative for omentum

**Methodology:** total of 50 patients of perforation peritonitis who underwent surgical management in Department of general surgery, Government Rajaji Hospital, Madurai during the period from march 2017 to august 2017, were included in this prospective study, and randomized into two groups based on in-patient number. 32 patients in falciform ligament patch (Group A) and 18 patients in omental patch (Group B). Patients were evaluated for postoperative leak, operative ease, duration of surgery, postop hospital stay, morbidity & mortality

**Result:** In this study, 50 patients diagnosed as cases of perforation peritonitis, who underwent emergency surgery, were evaluated for time of presentation, duration of surgery, postoperative leak, mortality and postoperative hospital stay (group A – 34 falciform ligament patch, and group B – 16 omental patch).

There were no significant differences between the two groups with regard to age, duration of surgery and postoperative hospital stay. In group A, 34 patients who underwent falciform ligament patch repair, had their perforation closed after taking sufficient bites through and through the perforation using 2/0 vicryl and placing the falciform ligament, after mobilizing it from the anterior abdominal wall. In group B, 16 patients underwent omental patch repair had their perforation closed by taking through and through bites first and placing omentum over it using 2/0 vicryl. In all the patients, 2 32F ICD drain were kept one in the pelvis and the other near the perforation site. The patients were followed for three weeks. Most of the patients went well without leak, and those who developed leak occurred in the first 5 days itself. In the present study we found that the falciform ligament patch technique significantly decreased the postoperative leak ( $P < 0.003$ ; significant), and mortality ( $p$  value  $< 0.029$ )

**Conclusion:** The present prospective study demonstrated that in cases of gastroduodenal perforations presenting to the surgeon in more than 6 hours falciform ligament is a better alternative than omentum regarding postoperative leak, ease of surgery, duration of surgery, and general outcome of the patient.

**Keywords:** omentum, falciformligament, gastroduodenal perforation closure

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Postoperative leak is one among the most commonly encountered complication following gastro duodenal perforation closure varying in incidence from 3 to 30%. Postop leak after surgery is a persistent problem much to the annoyance of surgeon and patient alike, in spite of advances in surgical techniques and hemostasis.

Smoking and NSAIDs are important etiologic factors for ulcer perforations and recent epidemiologic studies have documented an increasing rate of perforation, particularly in older women. The outcome of patients presenting with a perforated ulcer depends on:

Time delay to presentation and treatment—recent data suggest increasing delays for surgical treatment, in part as a consequence of more extensive diagnostic workup.

Site of perforation—gastric perforation is associated with a poorer prognosis.

Patient's age—elderly patients who often have associated comorbidities have a worse outcome.

presence of hypotension at presentation (systolic blood pressure  $< 100$ ).

Recent studies show that in carefully selected groups of patients a perforation can be treated conservatively with nasogastric decompression and antibiotics. This approach should, however, be used only if a water-soluble contrast study has confirmed that the ulcer is sealed with no extravasation of contrast into the peritoneal cavity. Such patients should be followed closely with regular physical exams and, if their abdominal exam or laboratory findings indicate progressive sepsis, should undergo surgery. This approach is generally used for individuals who have a perforation of 24 hours' duration, are stable, and often have significant comorbidities that increase the risk of surgical interventions. Different techniques are used to close the perforations, which include primary closure, omental patch and the most recent falciform ligament patch. falciform ligament has comparable vascularity and anatomical features, embryonal origin as that of the omentum. so it was tried in cases where a healthy omentum was not available. it was found to have adequate accessibility, adhesiveness, and less chances of postoperative leak. so falciform ligament is a better alternative than omentum in terms of postoperative leak and postoperative mortality and morbidity.

### **I. Aims And Objectives**

1. To study the surgical techniques of gastroduodenal perforation closure
2. To evaluate the use of falciform ligament as an alternative for omentum

### **II. Methodology**

This is a prospective study comprising 50 patients of perforation peritonitis over a period of six months from March 2017 to August 2017. In this present study, the clinical material consists of patients admitted with perforation peritonitis in the Department of General Surgery, at Government Rajaji Hospital, Madurai.

### **III. Method Of Collection Of Data**

#### **4.1 Sample size**

The size of sample work is 50 cases

Patients with odd in-patient who underwent falciform ligament patch for gastroduodenal perforations

Patient with even in-patient no. underwent graham omental patch for gastroduodenal perforations

#### **4.2 Inclusion criteria**

Patients above 15 years of age

Cases of perforation peritonitis diagnosed to have gastroduodenal perforation intraoperatively.

Patients consented for inclusion in the study according to the designated proforma.

#### **4.3 Exclusion criteria**

Patients with perforation peritonitis in sites other than gastroduodenal perforation

Patients who underwent non operative management

Patients below 15 years of age

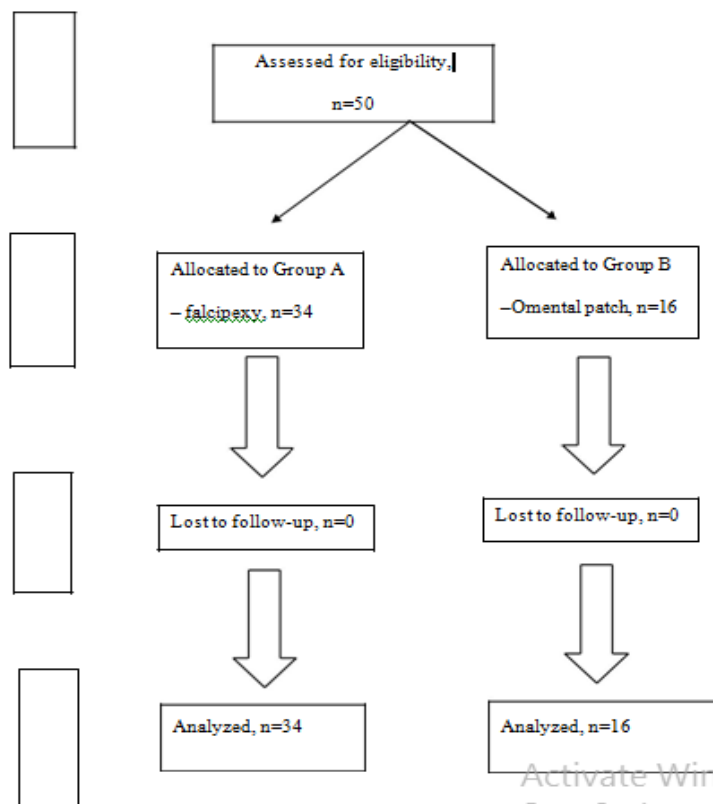
Patients not consented for inclusion in the study

The data will be collected in prescribed PROFORMA where in it contains, particulars of the patient, clinical history, clinical examination and diagnosis, relevant investigations, and details of surgery. The patients were followed for three weeks in post-operative period for postoperative leak, duration of surgery, postoperative morbidity and mortality. Ethical clearance has been obtained from ethical committee of Government Rajaji Hospital, Madurai, prior to conducting the study.

### **IV. Statistical Analysis**

In this study, the results of the two groups were compared and analyzed by using Chi-square test.

### 5.1 Consort Diagram



### V. Results And Observation

In this “comparison of surgical techniques for gastro duodenal perforation closure: a prospective study of falciform ligament patch versus graham omental patch” conducted in department of General Surgery at Government Rajaji Hospital, Madurai from March 2017 to August 2018, atotal of 50 patients of erforation peritonitis who underwent falciform ligament, were included in this prospective study, and randomized into two groups based on in-patient number. 34 patients with odd IP no in conventional falciform ligament (Group A) and 16 patients with even IP no in omental patch (Group B) were considered for the study.

Procedure	No.of Cases	Percentage
Falciform	34	68.0
Omental patch	16	32.0
<b>Total</b>	<b>50</b>	<b>100.0</b>

In this study, age of the patients were more than 18 years. The youngest patient included in this study series was 18 years, and the eldest was 74 years old. Almost 60% of the patients were in >50 age group.

ge in years	No.of cases	Percentage
< 30	6	12.0
31 - 40	7	14.0
41 - 50	7	14.0
51 - 60	15	30.0
> 60	15	30.0
<b>Total</b>	<b>50</b>	<b>100.0</b>

So perforation more often seen in elderly age groups, especially more than 50 years can be due to long term use of nsajds or chronic alcohol consumption.

Sex	No.of Cases	Percentage
Male	34	68.0
Female	16	32.0
<b>Total</b>	<b>50</b>	<b>100.0</b>

68% of the cases were males and 32% were females. more of elderly age groups.

Age in years	Falciform	Omental patch
	ligament	
< 30	3	3
31 - 40	5	2
41 - 50	4	3
51 - 60	13	2
> 60	9	6
<b>Total</b>	<b>34</b>	<b>16</b>

Sex	Falciform	Omental patch
	ligament	
Male	25	9
Female	9	7
<b>Total</b>	<b>34</b>	<b>16</b>

A total of 34 cases underwent falciform ligament patch repair of which 25 were males and 9 females.

Duration of surgery in minutes	Falciform	Omental patch
	ligament	
< 1 hr (28)	20	8
> 1 hr (22)	14	8
Total	34	16
Mean	77.35	82.5
SD	49.07	50.86
p value	0.734 Not significant	

Duration of surgery does not have any significance as both the surgeries were having comparable limit, p value 0.734 not significant.

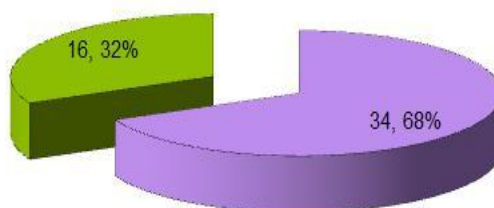
Post op Complications	Falciform	Omental patch
	ligament	
Post op Leak	1	6
Mortality	0	3

### VI. Postoperative Follow Up

Leak	1/34 vs 6/16	0.003	Significant
Mortality	0/34 vs 3/16	0.029	Significant

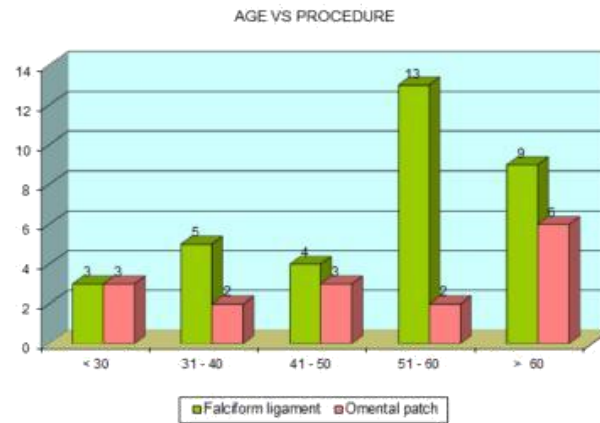
Postoperative leak was found only in 1 case out of 34 cases, p value is .003, found to be significant. Postop mortality was not found in any case of falciform ligament repair, where 3 out of the 16 cases of omental repair had postoperative mortality. So in cases of patients presenting with perforation peritonitis in more than 6 hours falciform ligament is superior to conventional omental patch in terms of mortality and postoperative leak.

### VII. Procedure

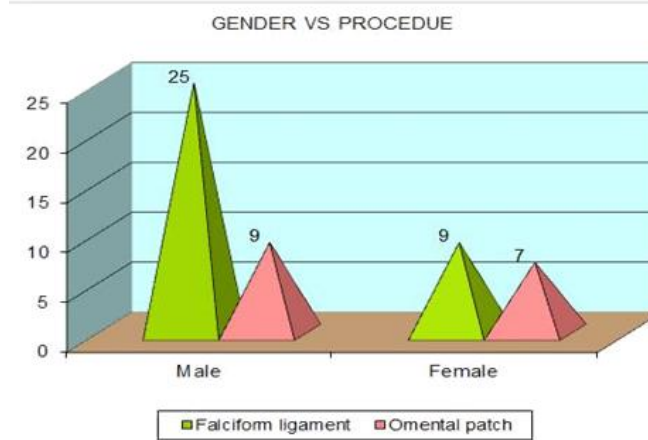


*“Comparison Of Surgical Techniques For Gastro Duodenal Perforation Closure: A Prospective Study Of..”*

In the present study, most of the atients presented after 6 hours so the omentum was found to be unhealthy so proceded with falciform patch repair..

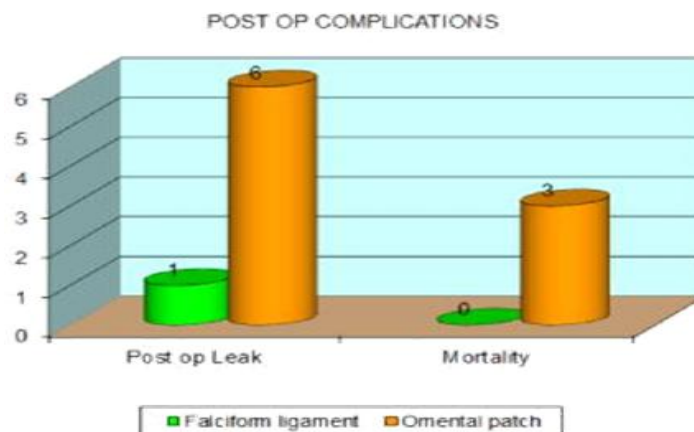


In the present study, most of the patients presented were over 50 years,ie almost 60% of the cases were of the age group more than 50 years



In the present study, out of the 50 patients, 34 were males and 16 were females, of the males 25 underwent falciform patch repair and 9 went for omental patch.

Of the females 9 underwent falciform ligament patch repair and 6 went for omental patch repair.



Duration of surgery does not have any significance in both the groups as both are having comparable results, p value was found to be 0.735

Post operative leak was found only in one case of falciform ligament, were 6 cases of omental patch developed leak, and the mortality was not found in cases which underwent falciform ligament repair, where one mortality was there in omental group, p value 0.003 regarding postoperative leak and 0.029 regarding mortality rates.

### **VIII. Discussion**

General outcome of a case of perforation peritonitis depends on many factors like age, time of presentation, size, site of perforation, availability of healthy omentum. Obliteration of perforation using omental patches have shown more chances of postoperative leak and mortality rates, many studies have shown the efficacy of falciform ligament as a better alternative than omentum in cases where the patient's presentation is delayed and also there is no healthy omentum present. So the present study was undertaken to evaluate the efficacy of obliteration of perforation using falciform ligament as a better alternative than omentum in reducing incidence of postoperative leak. In this study, 50 patients diagnosed as cases of perforation peritonitis, who underwent emergency surgery, were evaluated for time of presentation, duration of surgery, postoperative leak, mortality and postoperative hospital stay (group A – 34 falciform ligament patch, and group B – 16 omental patch). There were no significant differences between the two groups with regard to age, duration of surgery and postoperative hospital stay.

In group A, 34 patients who underwent falciform ligament patch repair, had their perforation closed after taking sufficient bites through and through the perforation using 2/0 vicryl and placing the falciform ligament, after mobilizing it from the anterior abdominal wall. In group B, 16 patients underwent omental patch repair had their perforation closed by taking through and through bites first and placing omentum over it using 2/0 vicryl. In all the patients, 2 32F ICD drain were kept one in the pelvis and the other near the perforation site. The patients were followed for three weeks. Most of the patients went well without leak, and those who developed leak occurred in the first 5 days itself. In the present study we found that the falciform ligament patch technique significantly decreased the postoperative leak ( $P < 0.003$ ; significant), and mortality (p value  $< 0.029$ ).

### **IX. Conclusion**

In the present study, 50 patients have completed the study protocol. Of this 34 patients in group A (Falciform ligament patch) and 16 patients in group B (omental patch). After analyzing the data and observations, the present prospective study demonstrated that the obliteration of gastroduodenal perforations using falciform ligament significantly reduces postoperative leak and mortality when compared with conventional omental patch. However, the sample size in the current study is relatively smaller, so a larger study sample may be needed before any further conclusion can be made. Although the study sample is small in this present study, it is still wise to recommend falciform ligament repair for patients presenting very late or when healthy omentum is not available.

### **X. Summary**

“Comparison of surgical techniques of gastroduodenal perforation closure, prospective study of falciform ligament versus omental patch” Conducted in department of general surgery at Government Rajaji Hospital, Madurai from March 2017 to August 2017.

Data collected in a prescribed proforma, analyzed and evaluated for duration of surgery, postoperative leak, postoperative hospital stay and mortality.

Sample size was 50 patients in two groups, group A - 34 (Falciform ligament patch) and group B – 16 (omental patch). All 50 patients completed study protocol.

Of the 50 patients, 34 men with mean age 51 (SD-14) years and 16 women with mean age 50 (SD -13) years.

#### **10.1 Patients were followed up for 3 weeks.**

1. There was no significance in both groups regarding operative time and postoperative hospital stay.
2. Regarding postoperative leak only 1 case out of the falciform group and 6 cases in omental group developed leak, p value 0.003. Regarding postoperative mortality, no cases in falciform ligament group, 3 cases in omental group had mortality, p value 0.029
3. However, the sample size in the current study is relatively smaller, so a larger study sample may be needed before any further conclusion can be made.

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