

A Study of various clinical parameters in peptic ulcer perforation and its relation with outcome

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Abstract

Background: Every year peptic ulcer disease affects 4 million people around the world. Perforation is the most important complication of peptic ulcer disease. Ulcer perforation was a lethal disease until surgical treatment was introduced.

Objectives: This study was performed to evaluate the age and sex incidence, associated clinical history, risk factor involved, time of surgical intervention done after the onset of illness, postoperative complication, total duration of hospital stay, mortality and its relation with outcome of the patient.

Material and Methods: This is a cross-sectional study, which was conducted from March 2014 until December 2014 at BRD Medical College, Gorakhpur. This study was performed to assess the demographic distribution of peptic ulcer, a detailed history was taken and clinical examination of the patient was carried out at the time of admission. X-ray abdomen erect posture, leukocyte count, serum amylase were performed along with other investigations. After surgery, site of perforation type of surgery along with any complications and outcome of treatment were recorded. Patients were followed-up for 30 days.

Results: A total of 100 patients were studied with men and women ratio of 13.3:1. Most common age group was the 41-50 years, while most common symptom was abdominal pain. X-ray abdomen erect showed gas under diaphragm in 96% patients and leukocytosis was present in 83% of cases. Duodenal perforations (64%) were more common than gastric perforations (36%). Simple closure with omental patch (98%) was the most common surgical method employed. Wound sepsis (22%) was the most common complication.

Conclusion: Perforation of peptic ulcer is one of the most common causes which require emergency laparotomy. Duodenum and pylorus are commonly involved and simple closure with omental patch was effective. Early operation is the key to successful treatment and minimizes mortality.

Key Words: Perforated peptic ulcers, duodenal ulcer, gastric ulcer, perforation, clinical study

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I. Introduction

Perforation is one of the most important complications of a peptic ulcer (Acid -peptic disease). Every year peptic ulcer disease affects 4 million people around the world. In spite of modern management, it is still a life threatening catastrophe. The sudden release of gastric or duodenal contents into the peritoneal cavity through a perforation leads to a devastating sequence of events which if not properly managed, is likely to cause death. Perforation may occur in a patient with a known chronic peptic ulcer or it may happen without any preliminary symptoms at all (20%). Recent statistics indicate that roughly 10% of the population develops a gastric or duodenal ulcer in lifetime. About 1-3% of population above the age of 20 years have some degree of acid peptic disease during any annual period.

Acute perforation is one of the complications of chronic duodenal ulcer (DC) and occurs in about 10-15% of all recognized chronic peptic ulcers. A detailed history with regard to the symptomatology of the patient, a meticulous examination of the patient, radiological and biochemical investigations help to arrive at a correct diagnosis of perforation. Despite of recent advances in both diagnosis and management of PUD, namely the improvement in endoscopic facilities, eradication of H. pylori & introduction of proton pump inhibitors, complications such as peptic ulcer perforation remains substantial health case problem. This may be due to an increase in the risk factors for peptic ulcer complications.^{1,2} Operative method is still the treatment of choice and simple closure of perforation is the method followed in most of the surgical centres. Since the first description of surgery for acute perforated peptic ulcer disease many techniques have been recommended. The recent advances in anti-ulcer therapy have shown that simple closure of perforation with omental patch followed by eradication of H. pylori is a simple and safe option in many centres & have changed the old trend of truncal vagotomy & drainage procedure.³ Conservative treatment is definitely unsuitable for routine use. But few of

the patients who are brought to the hospital at a late stage, have major concurrent illness and preoperative shock, may improve with conservative treatment with Herman Taylor's regimen.

A successful outcome is obtained by prompt recognition of the diagnosis, aggressive resuscitation and early institution of surgical management.

This study is performed to assess the demographic distribution of peptic ulcer, to assess the clinical presentation of peptic ulcer perforation (PUP), to evaluate the site of perforation and effective method of treatment and to study the complications of PUP and its management.

II. Material and Methods

This was a cross-sectional study of patients operated for peptic ulcer perforations at B.R.D. Medical College, Gorakhpur during period of March 2014 to December 2014. The subjects of this study included all patients who were operated for perforated peptic ulcers in Surgery emergency at Nehru Hospital, B.R.D. Medical College, Gorakhpur. Patients with incomplete data or who rejected to give consent were excluded from the study. The details of patients who presented from March 2014 to December 2014 were retrieved from patient registers kept in the Medical record departments, the surgical wards, and operating theatre & enrolled in the study after signing an informed written consent for the study.

A detailed history and thorough physical examination were followed by investigations like full blood count, blood grouping, serum urea, serum creatinine and random blood sugar. Patients were also screened for HIV infection using rapid test/ELISA test. Radiological investigations like X-ray abdomen erect and chest X-ray were done in all patients on the suspicion of diagnosis of perforated Peptic ulcer disease. The diagnosis of perforated Peptic ulcer was made from history, plain abdominal and chest radiographs, and confirmed at laparotomy. Patients were put on intravenous fluids (crystalloids), nasogastric suction, intravenous antibiotics and intravenous anti-ulcer drugs; adequate hydration was indicated by an hourly urine output of 30-50 ml/hour.

After adequate resuscitation, laparotomy was done through midline incision and identified the perforation site. Simple closure of the perforation and or reinforcement with pedicled omental patch (Graham's omentopexy) was done. Thorough peritoneal lavage with 3 to 4 liters of luke warm normal saline was followed by placement of two intraperitoneal drain, one at morrison's pouch & another in pelvis.

Patients were kept nil by mouth upto 4 days, and allowed orally once peristalsis returns. They started orally initially clear fluid and then soft to solid diet. The drains were removed on successive post-operative days when patient having each drain content less than 30ml. Patients were followed-up for 30 days.

Data collection

Data were collected using a preformed questionnaire. Variables included in the questionnaire were; patient's demographic data (age, sex), previous history of NSAID use, alcohol use and cigarette smoking, clinical presentation, timing of surgical treatment, site of perforation, post-operative complication and mortality. The duration of symptoms was defined as the time span between the initial pain perception due to perforation and the operation.

III. Results

During the study period total 116 patients were admitted. Out of them 9 did not give consent to participate in the study and 6 took LAMA (Leave against medical advance). The present study is based on analysis of 100 cases of peptic ulcer perforation. Out of the total of 100 patients studied, 93 were males, i.e., 93% while 7 were females, i.e., 7%, with a male: female ratio of 13.28:1 (Figure 2).

The majority of our patients were in the age group 41–50 years (41%) followed by age group >50 years (29%), and age group 31–40 years (22%) and 21- 30 years (8%), respectively, (Table 1).

A majority of patients (52%) presented between 24 and 48 h of onset of symptoms followed (34%) patients presented after 48 hours of onset of symptoms while (26%) presented within 6-24 hours of onset and (6%) presented within 6 hours. (Table 3)

Majority of patients (74%) had no previous history of peptic ulcer disease or any history of dyspepsia while (26%) of the patients had previous history of dyspepsia or were a known cases of peptic ulcer disease (Table 4).

A majority of patients 60% were known smokers while 46% had history of NSAIDs abuse and 42% patients were admittedly alcoholics.

The most common presenting complains were abdominal pain (100%) and abdominal distension (93%) followed by vomiting (73%). 60% complaint of not passing flatus and motion.

As for clinical signs 97% of the patients in this study had abdominal rigidity or guarding. Rebound tenderness could be elicited in 89% of the patients while 81% had elevated temperature. Obliteration of liver dullness was present in 78% of the patients. Out of 100 patients, 48 patients had pulse between 100-120 beats/min, 42 patients had pulse below 100 beats/min. and rest had more than 100 pulse. B.P. was within normal

limit in 85 cases (85%). 15 cases had B.P. 90/60 mmHg or less which was managed by intravenous fluid or vasopressor drugs. The respiratory rate varied from 20-24 in 88 cases (88%) while in the rest (12%) it was more than 24 per minute.

In total, 83% patients had leukocytosis ($> 10 \times 10^9$ per litre). All of the patients were subjected to erect X-ray abdomen erect posture out of these 96 cases (96%) patients showed radiological sign of gas under diaphragm while 4 cases (4%) patient did not show any radiological signs of perforation. Briefly, 3 cases (3%) patients showed elevated amylase levels (Table 5).

During surgery it was observed that duodenal and pyloric ulcer perforations (n = 64, i.e., 64%) surpassed prepyloric and gastric perforations (n = 36, i.e., 36%) by a huge margin. Simple closure with omental patch (n = 98, i.e., 98%) was the most common surgical method employed especially for duodenal perforation as well as gastric perforation repair. Also, 2 patients of duodenal ulcer perforation had giant perforations which warranted gastro-jejunostomy.

At the time of surgery peritoneal fluid collected was sent for examination. Out of 100 patients, 54 patients have bilious nature of peritoneal fluid, 36 patients have purulent nature of peritoneal fluid and 10 patients have serosanguinous nature of peritoneal fluid. Out of 100 patients, 60 patients have sterile peritoneal fluid culture and 40 patients have culture positive result. Most common organism was Staph. aureus, E.coli, Klebisella (Table 6).

The most common post-operative complication was wound sepsis (n = 22) followed by pneumonitis (n= 18) wound dehiscence (n = 7). In total, 7 patients ultimately died, due to low general condition, severe anemia, chest infection and renal failure etc. mortality rate being 7% (Table 7).



Figure 1: Gastric perforation

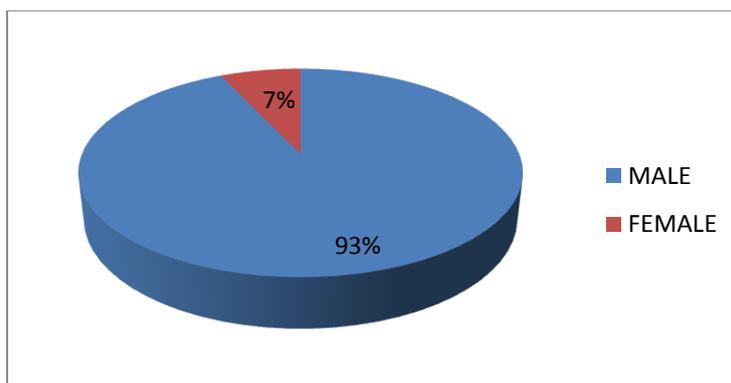


Figure 2: Gender Distribution

Table 1: Age distribution

Age group	No. of patients	Percentage
21-30 years	8	8%
31-40 years	22	22%
41-50 years	41	41%
>50 years	29	29%
Total	100	100%

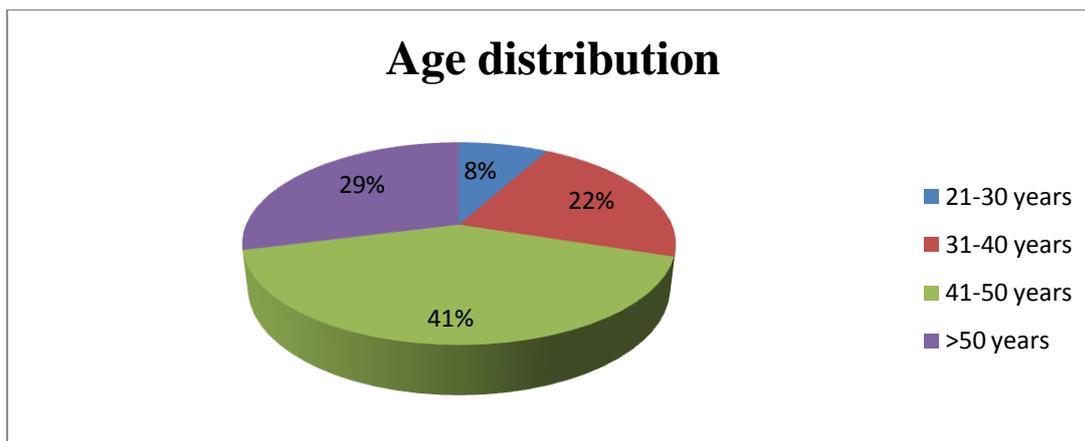


Figure 3: Age Distribution

Table 2: Time of presentation after onset of symptoms

Time of presentation	Frequency	Percentage
<6 hours	6	6%
6-24 hours	26	26%
24- 48 hours	52	52%
>48 hours	34	34%
Total	100	100%

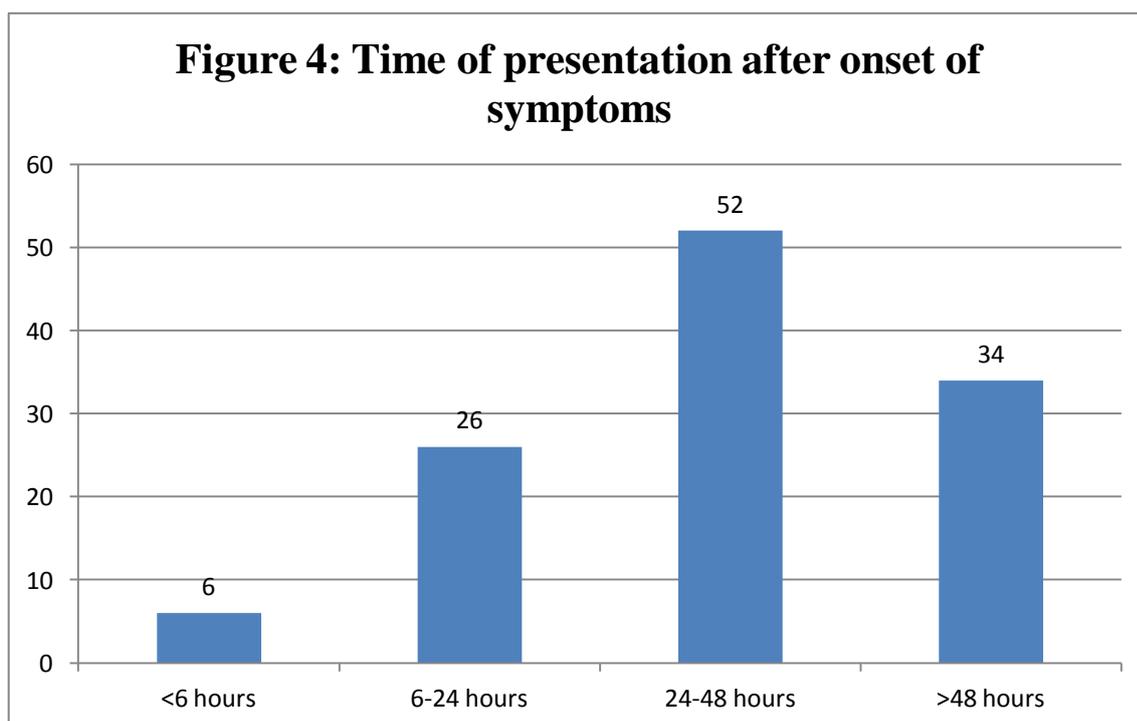


Table 3: History of peptic ulcer/dyspepsia

History of dyspepsia/peptic ulcer disease	Incidence
Yes	26%
No	74%

Table 4: Abuses

Abuses	Percentage
NSAIDs	46%
Smokers	60%
Alcoholics	42%

Table 5: Clinical features & investigations:

		Percentage
Symptoms	Abdominal pain	100%
	Abdominal distension	93%
	Vomiting	73%
	Not passing flatus and motion	60%
Signs	Abdominal rigidity or guarding	97%
	Rebound tenderness	89%
	Elevated temperature	81%
	Obliteration of liver dullness	78%
	Tachycardia	48%
	Shock with hypotension	15%
	Tachypnea	12%
	Investigations	Leukocytosis
	X-ray – Gas under diaphragm	96%
	Raised serum amylase	3%

Table 6: Nature of peritoneal fluid & culture of peritoneal fluid

Nature of peritoneal fluid	Number	Culture of peritoneal fluid	Percentage
Bilious	54	Sterile	36
		Positive	18
Serosanguinous	10	Sterile	6
		Positive	4
Purulent	36	Sterile	18
		Positive	18

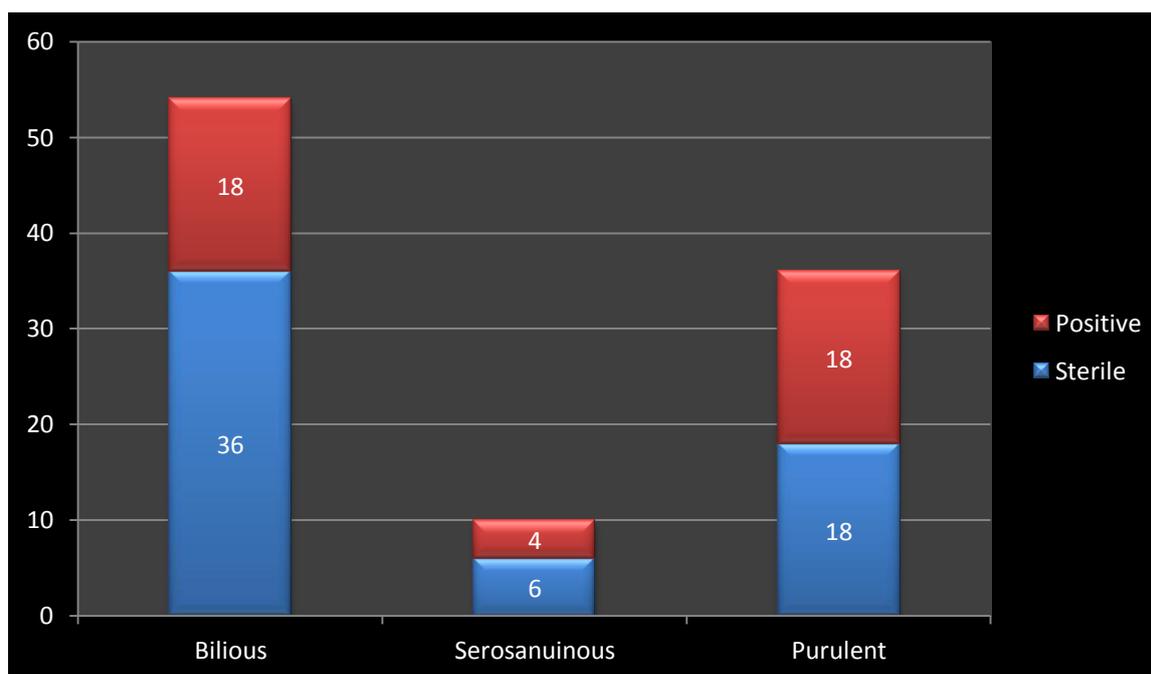
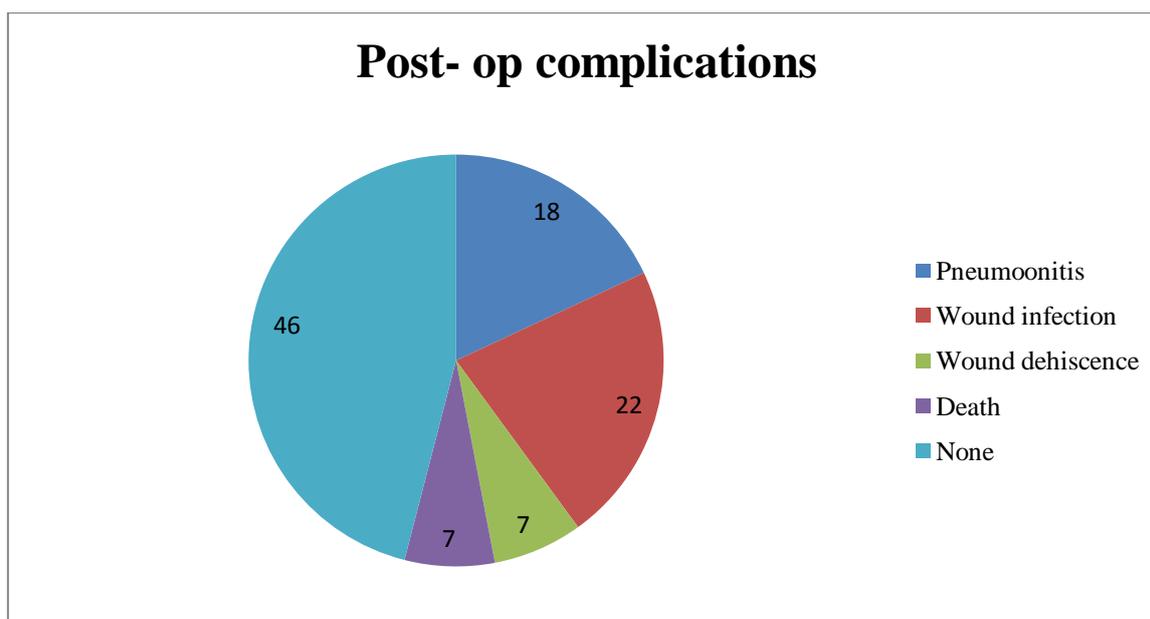


Figure 5: Nature and culture report of peritoneal fluid

Table 7: Post-op complications

Post-op complications	Percentage
Pneumonitis	18
Wound infection	22
Wound dehiscence	7
Death	7



IV. Discussion:

Peptic ulcer disease is a very common clinical entity. In our study PPU was more found in middle age group, from 30-50 years age similar to Mathur et. al.^{4,5}.

Our data showed male predominance (93%) may be attributed to use of smoking (60%) and alcohol (42%) similar to Shah PH et al.⁵

Preoperative H. pylori determination was not done, because of emergency nature of disease, but all patients were discharged with treatment regimen for 14 days for H. pylori and then continuous use of PPI for another three months.

Only 26% patients gave history of previously diagnosed peptic ulcer disease. Most of the patients gave no previous history of PUD similar to Shah PH et al.⁵

Most of the patients (52%) presented late for treatment, after more than 24 hours similar to Mathur et. al.⁴

The most common presenting complains were abdominal pain (100%), abdominal distension (93%) and vomiting (73%) similar to Deshmukh et. al.⁶

The most common presenting signs were abdominal rigidity or guarding (97%) followed by rebound tenderness (89%) elevated temperature (81%) and obliteration of liver dullness (78%). Our finding is in concordance with the findings of other authors.^{6,7}

In our study 83% patients had leucocytosis. All of the patients were subjected to erect X-ray abdomen, out of which maximum patients (96%) showed radiological sign of gas under diaphragm. Briefly, 3% patients showed elevated amylase levels similar to Everett et al.^{8,9}

In our study duodenal and pyloric ulcer perforations (64%) were much more common than prepyloric and gastric perforations (36%) similar to Shah et. al.^{5,10}.

In our study simple closure with omental patch (98%) was the most common surgical method employed especially for duodenal perforation repair. In total, (2%) patients of duodenal ulcer perforation had giant perforations which warranted gastrojejunostomy. Similar surgical treatment pattern was reported in other studies.^{11,12,13}

Most common complication in our study was found to be wound infection (22%) followed by pneumonitis (18%). Wound dehiscence was found in 7% cases. Mortality rate in our study was 7% similar to Jobta R et al.¹⁴

V. Conclusion & Recommendation:

Perforation of peptic ulcer is frequent surgical emergency and requires awareness and prompt management and operation. PUD and PPU is quite frequent, it may be because of spicy foods, smoking, alcohol use, irregular and inadequate treatment for peptic ulcer disease and most of patients from rural areas where ill literacy is still prevalent and proper medical facility is lacking.

It mostly affects young and middle aged males. Our study showed male predominance due to excessive use of alcohol and smoking. Alcohol consumption and smoking have been reported to be associated with increased risk for perforated peptic ulcer. Alcohol, as a noxious agent causes gastric mucosal damage, stimulates

acid secretion and increases serum gastrin levels and smoking inhibits pancreatic bicarbonate secretion, resulting in increased acidity in the duodenal bulb. It also inhibits the healing of duodenal ulcers. NSAIDs also play an important role, in elderly patients in particular. It may be because of frequent and indiscriminate use for pains. NSAIDs inhibit prostaglandin synthesis which reduces gastric mucosal blood flow. Many patients presented late for treatment. This may be attributed to lack of awareness of the disease, patients take some medication for pain locally at home and continues to eat and also the clinicians they consult at smaller places may not had suspected perforation. They only reach to higher centers when the pain becomes unbearable. These patients were on irregular and inadequate treatment. Most of the patients had no history of dyspepsia or PPU. Patients with no particular history of PUD are more likely to have PPU, as they take no treatment and dietary precautions. Simple closure with omental patches i.e. omentopexy give excellent results. Most of the times there are no alarming signs before actual ailment, but seeking proper medical help in time results in favorable results. Patient should be prescribed treatment for *Helicobacter pylori* and PPI. They should be advised to avoid the common risk factors like too much spicy food, smoking, excess alcohol use, and indiscriminate use of NSAIDs and should seek proper medical advice in time.

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