

## CLINICAL STUDY OF DUODENAL ULCER PERFORATION-IN A TERTIARY HEALTH INSTITUTION

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### ABSTRACT

**BACKGROUND** - Peptic ulcer disease though having multifactorial etiologies, out of which H.pylori infection and NSAIDs use are leading causes of duodenal perforation. Gastro-duodenal perforations are common in surgical practice. Acute perforations of duodenum are estimated to occur in 2-10% of patients with ulcers.

**OBJECTIVES**- The primary objective of this study is to describe clinical profile and socio-economic status effects on duodenal ulcer perforation.

**MATERIALS AND METHODS** - This a retrospective study (done between November 2020 to October 2021), where 100 patients with duodenal ulcer perforation were enrolled, analyzed and compared in Department of General Surgery, Pandit Raghunath Murmu Medical College And Hospital (PRM MCH), Baripada, Mayurbhanj, located in TRIBAL BELT of the state of Odisha.

**RESULTS** – More common in 40-59 years age group, male and lower socioeconomic status.

**CONCLUSION**-Duodenal ulcer perforation is one of the most common acute abdominal emergencies. Tribal peoples are more susceptible for duodenal ulcer perforation and its complications, owing to their habits, socioeconomics, cultural activities and lack of health awareness. Special attention may be given to these categories of patients in early diagnosis and management.

**KEY WORDS** – Tribal belts, Lower socio-economics status, Gastro-duodenal perforation, non-steroidal anti-inflammatory drugs, Pneumoperitoneum.

### INTRODUCTION

Gastro-duodenal perforations are common in surgical practice. In spite of the gradual decrease in the incidence of peptic ulcer disease in recent years due to use of proton pump inhibitors (PPIs) and eradication treatment for H. Pylori, its complications like bleeding and perforation, are still remain a substantial healthcare problem which may be related to increased use of non-steroidal anti-inflammatory drugs (NSAIDs), alcohol, smoking and the aging population [1,2,3]. Peptic ulcer disease though having multifactorial etiologies, out of which H.pylori infection and NSAIDs use are leading causes of duodenal perforation. Middle to older aged group are commonly affected in peptic ulcer disease. Duodenal ulcer perforations are 7 times more common than perforated gastric ulcers in both sexes. Acute perforations of duodenum are estimated to occur in 2-10% of patients with ulcers [4].

Mortality rate due to duodenal perforation ranges from 8%-25% [5,6,7]. The first description of a perforated duodenal ulcer was made in 1688 by Muralto and reported by Lenepneau [8]. In 1894, Dean reported the first successful surgical closure of a perforated duodenal ulcer [9]. Surgery is still the mainstay of treatment for duodenal perforation. Management is quite challenging in patients who present late, with septicemia, with fluid and electrolyte derangements, in shock or with systemic inflammatory response syndrome (SIRS)[8].

**AIM AND OBJECTIVES-** The primary objective of this study is to describe clinical profile and socio economic status effects on duodenal ulcer perforation and complications.

## **MATERIAL AND METHOD**

Study type – Record based Retrospective study

Source of data – Patients admitted in Department of General Surgery, Pandit Raghunath Murmu Medical College And Hospital (PRM MCH), Baripada, Mayurbhanj, located in a Tribal belt of the state of Odisha, for emergency surgery due to duodenal ulcer perforations between November 2020 to October 2021 .

Sample size – 100 (Male = 89, Female =11 )

Inclusion Criteria – Patients between 15 to 80 year of age irrespective of sex who were admitted for emergency surgery due to duodenal ulcer perforation ( based on clinical features, radiological evidences and intra-operative findings ).

Exclusion Criteria – Age below 15 years and more than 80 years

- Patients with multiple perforations
- Patients with anterior and posterior ulcer
- Patients with other diseases
- Immuno-compromised patients

**ETHICAL APPROVAL** -Taken from Institutional Ethics Committee(IEC) of Pandit Raghunath Murmu Medical College And Hospital (PRM MCH), Baripada, Mayurbhanj, Odisha, India , with Ref No. 30/6<sup>th</sup> IEC meeting before starting the study .

**FUNDING** – No funding of sources

**CONFLICT OF INTEREST** – None declared

## **RESULTS**

Table 1 : Age distribution.

Age in years	No. of cases	Percentage (%)
15-19	03	03
20-29	19	19
30-39	21	21
40-49	22	22
50-59	22	22
60-80	14	13
Total	100	100

Table-1 : Shows out of 100 patients studied, the age varies from 15-80 years. The number of patients are lowest in (15-19) years age group(3%), and highest in both (40-49) years and (50-59) years age group(22%).

Table 2 : Sex distribution

Sex	No. of cases	Percentage (%)
Male	89	89
Female	11	11
Total	100	100

Table-2 : Shows out of 100 patients studied, 89(89%) are male and 11(11%) are female.

Table 3 : Patient's Socioeconomics status according to Government of Odisha, India with perforated duodenal ulcers

As per Govt. of Odisha criteria	No. of cases	Percentage (%)
Below poverty line(BPL)	68	68
Above poverty line(APL)	32	32
Total	100	100

Table 3 : Shows 68% and 32% of patients belong to lower and upper socioeconomic status respectively.

Table 4 : History of peptic ulcers in patients with perforated duodenal ulcers

History	No. of cases	Percentage (%)
Present	62	62
Absent	38	38
Total	100	100

Table 4 : Shows 62% of patients have history of peptic ulcer disease.

Table 5 : Presence of free gas under diaphragm on digital X-ray of abdomen in erect posture showing both dome of diaphragm, in patients with perforated duodenal ulcers

	No. of cases	Percentage (%)
Free gas present	98	98
Free gas absent	2	2
Total	100	100

Table 5 : Shows on digital X-ray abdomen and pelvis, 98% of patients have free gas under diaphragm.

## DISCUSSION

Incidence of iatrogenic duodenal perforations are becoming more common following widespread use of endoscopic procedures such as endoscopic retrograde cholangiopancreatography (ERCP), operative injury related to surgical instrumentation, traumatic injury, foreign bodies (like ingested sharp and thin foreign body, implanted foreign bodies such as endoprosthesis or artificial vascular grafts), and spontaneous duodenal perforation in neonates.

In this study, among 100 patients included, the age varies from 15-80 years. The peak age incidence was equal in both (40-49) and (50-59) years age group, but duodenal perforation has no bar for a specific age group. Following table points opinions from many authors (Table-6).

Table 6 : Peak age

Author	Year	Peak age incidence (in years)

Samuel J et al <sup>10</sup>	1953	30-60
Debaley et al <sup>11</sup>	1990	> 50
M.C.Dandpat et al <sup>12</sup>	1991	20-40
Ramesh C et al <sup>13</sup>	1995	30-50
Hannah et al <sup>14</sup>	2005	31-40
Kalpesh Jani et al <sup>15</sup>	2006	30-50
Taylor et al <sup>16</sup>		>50
Noola GS et al <sup>17</sup>	2013	40-49
Present study	2021	Equal in both 40-49 and 50-59 age group(22%)

Table 6 : Shows Opinions from different authors, which correlates to our observation.

Out of 100 patients studied, 11 female cases were identified with duodenal perforation. This point towards male predominance which correlates to many authors. The difference in habits, social, economical and cultural activities may be reasons for that (Table-7).

Table 7 : Sex incidence

Author	Year	Male : female ratio
Paul. H. Jordan <sup>18</sup>	1995	26 : 1
Primrose N. John <sup>19</sup>	2004	2:1
Rodney Maingot <sup>20</sup>	1990	5 : 1
Noola GS et al <sup>17</sup>	2013	19 : 1
Present study	2021	8 : 1

Table 7 : Shows Male predominance for perforated duodenal ulcer.

Out of 100 patients studied, 68 cases belonged to lower socioeconomic status, which signifies these people were more susceptible for duodenal perforation and it's complications like fluid-electrolyte imbalance, sepsis, SIRS, septicemia and shock.. The difference in habits, social, economical and cultural activities may be reasons for that.

Digital X-ray abdomen and pelvis was advised to all patients. 98% cases were found with free gas under diaphragm out of 100 cases studied(Table-8).

Table 8 : Comparison of free gas under diaphragm

Presence of free gas under diaphragm		
Study	Year	Pneumoperitoneum (%)
Shaffer study <sup>21</sup>	1992	70
Noola GS et al <sup>17</sup>	2013	91.67
Present study	2021	98

## CONCLUSION

Gastro-duodenal perforations are common in surgical practice. As this Tertiary Health Institution is located in TRIBAL BELT of the state of Odisha ,India more peoples are belongs to below poverty line(BPL) and they are more susceptible for duodenal ulcer perforation and it's complications ,owing to habits, social, economical and cultural activities as well as lack of health awareness. Attention may be given to these categories of patients with respect to early diagnosis,quick resuscitation and urgent surgical intervention.

## REFERENCES –

1. Sung JJ, Kuipers EJ, El-Serag HB. Systematic review; the global incidence and prevalence of peptic ulcer disease. *Alimentary Pharmacology & Therapeutics*. 2009;29:938-946.

- [Crossref], [Pubmed], [Google Scholar],[Web of Science]
2. Lallu JY, Sung J, Hill C, et al. Systematic review of the epidemiology of complicated peptic ulcer disease: incidence, recurrence, risk factors and mortality. *Digestion*. 2011;84:102-113.  
[Crossref], [Pubmed], [Google Scholar],[Web of Science]
  3. Soreide K, Thorsen K, Soreide JA. Strategies to improve the outcome of emergency surgery for perforated peptic ulcer. *British Journal of Surgery*. 2014;101:e51-e64.  
[Crossref], [Pubmed], [Google Scholar]
  4. Behrman SW. Management of complicated peptic ulcer disease. *Archives of Surgery*. 2005 ; 140:201-208. [Crossref], [PubMed], [Google Scholar]
  5. Machado NO. Management of duodenal perforation post-endoscopic retrograde cholangiopancreatography. When and whom to operate and what factors determine the outcome ? A review article. *Journal Of Pancreas*. 2012; 13:18-25. [PubMed], [Google Scholar]
  6. Moller MH, Adamsen S, Thomsen RW, et al. Multicentric trial of a perioperative protocol to reduce mortality in patients with peptic ulcer perforation. *British Journal of Surgery*. 2011; 98:802-810. . [Crossref], [PubMed], [Google Scholar], [Web of Science ]
  7. Lau JY, Sung J, Hill C, et al. Systematic review of the epidemiology of complicated peptic ulcer disease: incidence, recurrence, risk factors and mortality. *Digestion*. 2011;84:102-113. . [Crossref], [PubMed], [Google Scholar], [Web of Science ]
  8. Lenepneau I, Cas de perforation der duodenum de lien d'une ancienne cicatrice de cet intestina. *Gaz Hop*. 1839;35:137. [Google Scholar]
  9. Dean HP. A Case of perforation of a chronic ulcer of the duodenum successfully treated by excision: death two months later from acute intestinal obstruction by a band. *British Medical Journal*. 1894;1:1014-1015. [Crossref], [PubMed], [Google Scholar]
  10. Stabin SJ, Rochester NY. The aftermath of perforated duodenal ulcer, *Surgery*. 1953;34(3):614-20.
  11. Debaeky et al: *Gastroenterology* 1990; 102; 443-446.
  12. Dandapat MC et al: *Gastrointestinal perforations*, *Indian journal of Surgery*. 1991;53(5):189-93.
  13. Ramesh C. Bharti et al: *Immediate definitive surgery in perforated duodenal ulcer: A comparative study between definitive surgery and simple closure*, *Indian Journal of Surgery*. 1996;58(10):275-9.
  14. Hannan A et al. *Early complications of suture closure of perforated duodenal ulcer: A study of 100 cases*. *Transactional Analysis Journal*. 2005;18:122-6.
  15. Jani K et al. *Omental plugging for large sized duodenal peptic perforation: A prospective randomized study of 100 patients*. *Southern Medical Journal*. 2006;99(5):467-71.
  16. Taylor. *Recent advances in surgery* 17<sup>th</sup> Edition.
  17. Noola GS et al. *A clinical study of duodenal ulcer perforation: International Surgery Journal*. 2016;3(2):711-713.
  18. Paul JH, Jack T. *Perforated pyloroduodenal ulcers. Long term results with omental patch closure and parietal cell vagotomy*. *Annals of Surgery*. 1995;221-5:479-88.
  19. Primrose JN. *The stomach and duodenum*. *Bailey & Love's short practice of surgery*. 24<sup>th</sup> edition. Hodder Arnold. 2004;1026-46.
  20. Debas HT, Molvitill SJ. *Maingot's Abdominal operations – 10<sup>th</sup> edition*. *Appleton & Lange*. 2001;1:983-4.
  21. Shaffer HA. *Perforation and obstruction of the gastrointestinal tract: Assessment by conventional radiology*. *Radio Clinic of North America- Journal Elsevier*. 1992;30:405.