

Accuracy of Diagnostic Peritoneal Paracentesis in Acute Abdomen Requiring Emergency Surgical Intervention

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Abstract

Introduction: Abdominal paracentesis is a simple bedside or clinic procedure in which a needle is inserted into the peritoneal cavity, and ascitic fluid is removed. Diagnostic paracentesis refers to the removal of a small quantity of fluid for testing.

Aim: To evaluate the efficacy of abdominal paracentesis as a simple, bedside diagnostic tool in diagnosing the acute abdominal conditions requiring emergency surgical interventions.

Materials and Methods: All patients with acute abdominal pain, both traumatic and nontraumatic, ages between 12 and 70 years and patients with shock and suspicion of acute abdomen were included in the study.

Results: Overall diagnostic accuracy of positive peritoneal paracentesis in our study was 93.75%. The study showed that the procedure was 100% accurate in blunt trauma abdomen and gastroduodenal perforation. There was a complete absence of complications in our study.

Conclusion: In conclusion, our study reestablishes the simplicity, safety and accuracy of peritoneal tapping as a diagnostic aid in acute abdomen. It is particularly useful in centers where radiological facilities do not exist.

Key words: Diagnostic tool, Emergency, Peritoneal paracentesis

INTRODUCTION

The term "acute abdomen" designates symptoms and signs of intra-abdominal disease usually treated best by surgical operation. Many diseases of which, some do not require surgical treatment produce abdominal pain, thus the evaluation of patient with acute abdominal pain must be methodical and careful.¹ Prognosis of acute surgical conditions of the abdomen depends on accurate diagnosis and early surgical intervention. However, the diagnosis of acute surgical conditions of abdomen is in many instances challenging and complex. The problem

becomes more baffling when 24 h services of radiology and laboratory are not available. In these circumstances, abdominal paracentesis becomes useful and carries immense value. Most of the cases of the acute abdomen can be diagnosed clinically by the presence or absence of abdominal pain; abdominal tenderness, guarding, and rigidity.² There should be a certain diagnostic modality which confirms the diagnosis and the surgeon should feel safe and accurate in deciding which patients require surgical intervention. Although imaging modalities such as X-rays, ultrasonography (USG), computed tomography (CT), and magnetic resonance imaging are available and can diagnose accurately, these investigations are not available everywhere or not available for 24 h, in developing countries like India. For these reasons, there should be a diagnostic modality which is simple, accurate and available by the bedside. Peritoneal paracentesis is a simple, accurate and bedside procedure. This requires an appropriate size needle attached to a disposable syringe which is available everywhere.³ The basic principle is that in many cases of acute abdomen,

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there is a collection of fluid in the peritoneal cavity. Aspirating the fluid and analyzing it both grossly and microscopically will aid in arriving at the diagnosis. The objections to the technique, most often raised had been on the grounds of safety. As the procedure is blind, there are chances of puncturing the bowel.⁴ However, many clinical and experimental studies have proved beyond doubt that even if bowels are punctured by the needles, subsequent leakage is a very small hazard. In spite of numerous articles advocating the acceptance of this extremely useful diagnostic tool, some continue to deplore it, and others have not had sufficient experience in performing this procedure or do not understand the merits and limitations. The present study was undertaken to know the merits and demerits of peritoneal tapping in surgical acute abdomen.⁵

Aim

To evaluate the efficacy of abdominal paracentesis as a simple, bedside diagnostic tool in diagnosing the acute abdominal conditions requiring emergency surgical interventions.

MATERIALS AND METHODS

All acute abdominal cases admitted to the emergency surgical wards in Tirunelveli Medical College Hospital were included in the study. A total of 50 cases were studied during this period. All patients with acute abdominal pain, both traumatic and nontraumatic, ages between 12 and 70 years and patients with shock and suspicion of acute abdomen were included in the study. Vital signs of the patient were recorded. Thorough clinical examination was done for the evidence of abdominal tenderness, guarding, rigidity, obliteration of liver dullness, and peristaltic sounds. Based on the history and clinical examination, provisional clinical diagnosis was made, and routine investigations such as complete blood count, blood sugar, urea, creatinine, and liver function tests were done in all patients. Specific investigations such as erect X-rays abdomen, USG abdomen, and pelvis, and CT was done depending on provisional diagnosis and their requirement. Before the patient was subjected to the four quadrant peritoneal tap, erect X-ray abdomen was done, reasons being, the theoretical chances of air being either introduced into the peritoneal or sucked from the peritoneal cavity while performing the procedure. The fluid aspirated from the peritoneal cavity was analyzed macroscopically and microscopically.

RESULTS

A total of 50 cases of acute abdominal emergencies admitted to the emergency surgical ward of Tirunelveli

Government Medical college Hospital were studied. Details regarding the age, sex, occupation, address, presenting symptoms physical signs, and the characteristics of the aspirated fluid were studied and analyzed. Vital signs were examined, and a complete systemic examination of the patients was done. The patients were put on nasogastric aspiration, intravenous fluids, antibiotics, analgesics, and antacids. Patients were catheterized depending on the need for the same. Patients presenting in shock were resuscitated. Routine investigations were sent including blood grouping. In suspected perforative peritonitis erect X-ray abdomen was done before the tap. Once peritoneal tapping with fluid cytology was done and diagnosis made, patients were also subjected to other radiological investigations (USG and CT) depending on their need and our diagnosis confirmed, patients were taken up for surgery, and definite surgical procedures were done. For patients with inconclusive diagnosis after tapping, other investigations such as USG abdomen and CT abdomen were taken and depending on clinical circumstances, patients were subjected to operative/nonoperative management.

Out of 50 cases, 17 were from 21 to 30 age group. Next common age group was between 31 and 40 years, which constituted 10 cases followed by 41-50 age group which constituted 9 cases. Out of 50 cases studied, there were 34 male patients and 16 female patients. In this study, males were affected more than the females.

The most common symptom in our study was abdominal pain, present in 50 cases (100%) followed by vomiting in 27 cases (54%), abdominal distension in 26 cases (52%), and least being constipation in 21 Table 1.

Abdominal tenderness was the most common sign present in all cases (50), guarding was present in 25 cases, rigidity was noted in 27 cases, and liver dullness was obliterated in 12 cases. Absent bowel sounds in 29 cases. Tachycardia was noted in 43 cases. Diagnosis of shock was made in 13 cases. Out of 50 cases, 36 were due to nontraumatic abdominal pathology, and 14 cases were caused by traumatic Table 2.

Initially, the procedure was carried out in the right lower quadrant in all 50 patients, of which 40 were positive, and tap was not repeated. For 6 cases, tap was positive in the left lower quadrant and in 04 cases, tap was positive in the left upper quadrant and in 2 cases, tap was positive in the right upper Table 3.

A lot of information can be gathered by gross examination of the aspirated fluid. Most of the times, the physical characters of the aspirated fluid will give a probable clue to the pathology. In the present study of 50 cases, we could aspirate the characteristic fluid in 46 cases. The most

common type of fluid, we aspirated was bilious in 15 cases. Purulent fluid was seen in 11 cases. Feculent in 2 cases, turbid fluid was noted in 2 cases. Clear fluid in 1 case. Serosanguinous fluid was positive in 3 cases. Hemorrhagic fluid was positive in 10 cases blood stained fluid in 2 cases and bile stained in 2 cases.

In cases of positive taps, we noticed odorless fluid in 37 cases, purulent foul smell in 6 cases, feculent odor in 2 cases, and uriferous in 1 Table 4.

Out of 46 positive study group 45 patients were subjected to laparotomy. In every case, pathological fluid in the peritoneal cavity at operation was correlated with the finding of pre-operative paracentesis. In one patient with diffuse peritonitis with suspected intra-abdominal pathology, paracentesis revealed a turbid fluid in the right hypochondrium; further radiological investigations confirmed the diagnosis as acute cholecystitis and patient managed conservatively. Out of 4 negative study groups laparotomy was done in 3 cases based on the clinical and radiological investigations, and the surgery revealed a true intra-abdominal pathology. Remaining 1 case, patient managed conservatively without Table 5.

Out of 50 cases, 46 cases only we get a fluid aspiration from the peritoneal cavity, for the remaining cases, we did not get any fluid on aspiration. While subjecting this fluid for cytology, we able to get a cell count of red blood cell >1 lakh cells/cu.mm for 9 cases in traumatic group and 1 case in nontraumatic group, all are subjected to laparotomy, and hemoperitoneum confirmed.

For remaining 36 cases, we get a cell count of white blood cell >500 cells/cu.mm with cell count ratio >1 ; of these only 35 cases underwent laparotomy and obviously, pathological fluid was confirmed in laparotomy. In remaining one case though we get a peritoneal fluid with turbid and odorless in nature with cytology shows increased polymorphs count, further radiological investigations revealed it as an acute cholecystitis, hence patient managed conservatively.

In this study, there were 46 positive taps, among them 33 cases were nontraumatic, and 13 cases were traumatic. Out of 33 cases in nontraumatic group, 6 cases were gastric perforation, 9 cases were duodenal perforation, 5 cases were ileal perforation, 5 cases were appendicular perforation, 1 case is ruptured ectopic pregnancy, 1 case is diffuse peritonitis with post anastomotic leak, 2 cases were intra-abdominal abscess due to ruptured liver and splenic abscess, 1 case due to gall bladder perforation, and 2 cases were small bowel strangulation due to mesenteric ischemia and ileo-ileal knotting. In one patient there was a positive tap, but further investigations revealed as acute

cholecystitis and managed conservatively. Of the 13 cases in traumatic group 4 were due to liver injury, 3 cases due to splenic laceration, 2 cases due to mesenteric tear, and 2 cases due to jejunal perforation, 1 case due to sigmoid perforation, and 1 case due to bladder Table 6.

In this study, we encountered negative taps in 4 cases. Among these, 1 case was due to retroperitoneal hematoma, which one is managed conservatively, The remaining 3 cases were subjected to laparotomy based on clinical and radiological backgrounds which were diagnosed as Meckel's diverticulitis, ileal perforation, and intussusception in each one Table 7.

In our study 50 cases were subjected to peritoneal paracentesis, tap was positive in 46 cases and negative/dry tap in 4 cases. In nontraumatic group, there were 36 cases of these 33 cases had a positive tap. In 1 case, a 48-year-old male patient with feature of diffuse peritonitis, where history and examination are equivocal, tapping revealed a turbid fluid containing polymorphs in the right hypochondrium but subsequent radiological investigations confirmed the diagnosis as acute cholecystitis and patient recovered on conservative treatment without emergency surgical intervention. In other 32 cases, we had positive tap both macroscopically and microscopically which was confirmed by emergency laparotomy. In remaining 3 cases, we had false negative result. In these case no fluid was aspirated in spite of the presence of fluid in the peritoneal cavity. The diagnostic accuracy (sensitivity) in nontraumatic group was found to be 91.42% with the high percentage of true positive result was found in gastroduodenal perforations. In traumatic group, paracentesis was positive in 13 cases. All of them underwent laparotomy with positive pathology. In 1 case, we had negative tap and further investigations diagnosed as retroperitoneal hematoma without intra-abdominal organ injury, and patient responded well to conservative line of management. Most common intra-abdominal organ injury in our study was liver laceration. The diagnostic accuracy of paracentesis in traumatic group was found to be 100%. The overall diagnostic accuracy of abdominal paracentesis in both nontraumatic and traumatic group was Table 8.

DISCUSSION

In our present series, acute abdominal disease was more common in the male sex. 39 out of 50 cases were male accounting for 78.00% and 11 were females accounting for 22.00%. Males dominated in the blunt trauma abdomen. This is probably because of active involvement of males in daily life and high incidence of trauma under the influence of alcohol. Positive tap reported in literature ranges from

52% to 100%. In the present series, we got the positive tap in 46 out of 50 cases with an accuracy of 93.75%. This positive rate is in close confirmation with the observation made by other workers. Rao *et al.* performed a study in 100 cases and their positive tap rate was 81.00%.⁶ Trivedi *et al.*, in their series of 70 cases had positive taps in 57 cases amounting to 81.00%.⁷ Khan *et al.*, in their series of 56 cases had 46 positive tap amounting to 82.14%.⁸ Baker *et al.* in an unselected series of 101 patients, found positive results in 83%.⁹ Lamke and Varenhorst did a study on 114 patients with a positive rate of 90%.¹⁰ Sloop reported 94% positive rates in his study of 65 cases.¹¹ McPartlin and McCarthy in his study of 100 cases had positive rate of 67%.¹² Giacobine and Sile performed diagnostic paracentesis in 130 patients with a positive rate of 82%.¹³ Prout (1968) had 72% positive rate in his study.¹⁴ Majority of cases in our series was in nontraumatic acute abdomen. 36 out of 50 cases were in this group, accounting for 72%. Peritoneal paracentesis was positive in 33 cases with true positive in 32 cases, accounting for 88.88%. Approximately, similar reports have been published in literature. Baker *et al.* reported accuracy of diagnostic tap in 80% of cases with perforated duodenal ulcer or gastric ulcer.⁹ Similar reports have been reported by Singh *et al.*¹⁵ and Thate *et al.*¹⁶ *et al.* Rao (1993) obtained 100% positive results in gastrointestinal perforation.¹⁷ Mahanta *et al.* showed 76.47% positive tap in nontraumatic acute abdomen.¹⁸ In our series, we obtained 33 positive taps in nontraumatic acute abdomen. Of which 32 had true positive, i.e., the characteristic fluid aspirated correlated with the intraoperative finding. Only one case with false positive result, i.e., though we aspirated turbid fluid from the peritoneal cavity, further investigations revealed it as an acute cholecystitis and that patient treated conservatively without emergency laparotomy. Except this case we did not encountered false positive cases, this is possibly due to exclusion of patients with acute intestinal obstruction and multiple abdominal scars from our study. Although the clinical and radiological picture in majority of visceral perforation is characteristic, there are some instances, where, the diagnosis is uncertain and in such circumstances abdominal paracentesis proves very helpful. We encountered four such instances in our clinical study. In one case, we were in diagnostic dilemma between perforative peritonitis and acute pancreatitis. This was because of both patients presented with shock and per abdomen examination revealed tenderness, guarding and rigidity. Erect X-ray abdomen showed only ground glass appearance. Diagnostic aspiration of peritoneal fluid revealed bilious. Diagnosis of perforative peritonitis was made and laparotomy done which revealed gall bladder perforation. Peritoneal paracentesis proved to be valuable in these circumstances, as opening, the patient with acute pancreatitis would have been disastrous. In another case, a female patient presented with

shock and localized lower abdominal tenderness and guarding, X-ray abdomen erect showed localized ileus, USG abdomen detects free fluid in pelvis, and diagnostic aspiration of peritoneal cavity revealed frank blood. Patient immediately taken up for laparotomy and found to be ruptured ectopic pregnancy. In other two cases of suspected peritonitis, where radiological findings inconclusive. But diagnostic aspiration revealed bilious. Patient taken up for laparotomy and found to be a ileal perforations. Abdominal paracentesis proved its usefulness in a post-operative case where diagnosis was difficult. We encountered such a case during our study. A 45-year-old male was admitted to surgical ward with a diagnosis of perforation. He underwent emergency laparotomy with ileal anastomosis. Post-operative period was uneventful till 5th day. Patient started with soft diet and drain was removed on 6th post-operative day. On 8th post-operative day, patient developed breathlessness with wheeze. On 9th post-operative day patient's condition deteriorated with pulse rate of 116/min and with blood pressure was 90/60 mmHg. Per abdominal examination revealed slight distention with tenderness but no guarding or rigidity. USG abdomen and pelvis showed moderate degree ascites with right sided pleural effusion. Bilious fluid was aspirated on peritoneal paracentesis. Laparotomy revealed anastomotic breakdown. Proximal diversion loop ileostomy colostomy and abdomen closed. Peritoneal paracentesis proved very useful in deciding the need for surgical intervention. Similar reports were published in literature. Singh *et al.* encountered three post-operative cases, where peritoneal paracentesis was very useful in arriving at the diagnosis.¹⁵ Baker *et al.* in his article published two post-operative cases where abdominal paracentesis undoubtedly helped the surgeon.⁹ In our series, we encountered 36 cases of nontraumatic acute abdomen. 27 out of 36 cases were due visceral perforation. Out of 27 visceral perforations 26 cases were positive for abdominal tap, resulting in 96.29% accuracy. Thus, the present study revealed that the utility of abdominal paracentesis is considerably effective in visceral perforations. In our series, we had 15 cases of gastroduodenal perforations. Peritoneal paracentesis was positive in all of them. This high accuracy (100.00%) was possibly due to the late presentation of patients to the hospital. Average time of onset to the presentation to the hospital in our study was 2-3 days. The late presentation allows accumulation of fluid in the peritoneal cavity, resulting high chances of positive peritoneal tap. Thus, peritoneal tap is particularly useful in developing country like India, where patients usually present late to the hospital. This high accuracy in gastroduodenal perforations of our study was comparable with the observations of other workers Bhatnagar and Asopa.¹⁹ 100.00%, Mahanta *et al.*¹⁸ 92.00%. In our series, we had 6 cases of ileal perforations out of which 5 cases were positive and 1 case was negative for tap. All positive cases

were confirmed during the laparotomy. In the negative tap, on laparotomy there was minimal fluid in the peritoneal cavity. Negative tap in our study was possibly due to needle tip not reaching up to the fluid level or due to the collection of fluid in the most dependent portion of the peritoneal cavity, that is, in the pouch of Douglas. Analysis of characteristic fluid aspirated helped in locating the nature and to some extent the site of lesion in perforation. In cases

Table 1: Distribution of symptoms

Symptoms	Number of cases (%)
Pain	50 (100)
Vomiting	27 (54)
Abdominal distension	26 (52)
Constipation	21 (42)

Table 2: Distribution of signs

Signs	Number of cases (%)
Tenderness	50 (100)
Guarding	25 (50)
Rigidity	27 (54)
Liver dullness obliteration	12 (24)
Absent bowel sounds	29 (58)
Tachycardia (>100/m)	43 (86)
Shock (<90/60 mmHg)	13 (26)

Table 3: Site of the positive tap

Site of the tap	Number of tap performed	Positive	Negative
Right lower quadrant	50	40	10
Right upper quadrant	02	01	01
Left lower quadrant	06	04	02
Left upper quadrant	04	00	04

Table 4: Nature of the aspirated fluid

Nature of the aspirated fluid	Number of cases (%)
Bilious	15 (30)
Hemorrhagic	10 (20)
Bile stained fluid	02 (04)
Blood stained fluid	02 (04)
Purulent	11 (22)
Feculent	02 (04)
Serosanguinous	01 (06)
Turbid	02 (04)
Clear	01 (02)
Dry tap/negative tap	04 (08)

Table 5: Relationship between peritoneal

Peritoneal fluid cytology	Laparotomy	Number of cases
Positive microscopic findings RBC >1 lakh cells/cu.mm or/and WBC > 500 cells/cu.mm; cell count >1	Laparotomy	45
	No laparotomy	01
Negative microscopic findings RBC <50,000 cells/cu.mm WBC <100 cells/cu.mm; cell count <1	Laparotomy	00
	No laparotomy	00

RBC: Red blood cell, WBC: White blood cells

of peptic perforations, we could able to tap a bilious, purulent or turbid fluid with flakes. Of the 15 gastroduodenal perforations, 11 were bilious and 4 were purulent fluid with flakes. We noticed that, in perforations distal to the duodenum time aspirate was foul smelling and feculent. In our series, we encountered 2 cases of gangrenous small intestine. Peritoneal tap revealed a characteristic blood stained dark fluid with foul smell. Laparotomy confirmed the same fluid with gangrenous jejunal and proximal ileum in one case due to mesenteric ischemia and in other case with gangrenous ileum due to knotting of the ileum. This shows that peritoneal paracentesis is also useful in strangulated bowel. This was also an observation by Moretz and Erickson,²⁰ Bhatnagar and Asopa¹⁹ 1971, McPartlin and McCarthy¹² in 1971, Singh *et al.*,¹⁵ in 1973, Kosloske and Goldthorn²¹ in 1982. In our present series, we encountered 14 patients who presented with blunt abdominal trauma and paracentesis was performed in all patients. Positive tap was obtained in 13 cases. All of them underwent laparotomy and had hemoperitoneum with visceral organ injury. 4 out of 13 had liver laceration, 3 had splenic laceration. In four cases, bile mixed with blood was aspirated, laparotomy done and found that two were due to mesenteric tear and two had jejunal perforation, In one case, feculent fluid was aspirated and laparotomy revealed sigmoid colon perforation. In one case clear fluid was aspirated with urine smell due to intraperitoneal rupture of bladder. The most common finding in our study was liver laceration. The diagnostic accuracy in our study, with positive paracentesis rates was 100%. We encountered 1 negative tap, radiological investigations revealed retroperitoneal hematoma, which we managed conservatively and the patients responded well to it. Thus, abdominal paracentesis has a high rate of sensitivity and specificity in detecting intraperitoneal hemorrhage preoperatively and can be a useful guide. This was also an observation of many other workers. Mansoor *et al.*²² performed a study on 50 cases and 12 out of 13 positive were true positive with diagnostic accuracy of 91.2%. Mahanta *et al.*¹⁸ reported diagnostic accuracy of 84.3% in blunt abdominal trauma. Lamke and Varenhorst¹⁰ detected intra-abdominal bleeding in 90% of cases. Overall, 4 taps were negative in our study. Out of which 1 case was true negative. Further clinical and radiological investigations revealed as a retroperitoneal hematoma without intra-abdominal organ injury and we managed conservatively. Thus, negative tap helped us to avoid an unnecessary

laparotomy. The remaining 3 cases were false negative; the clinical picture in all these cases was quite obvious of intra-abdominal pathology. Clinical and radiological investigations found to be suspicious of intra-abdominal pathology. In these cases negative tap was not taken into consideration and decision for laparotomy was made. Findings of laparotomy were coincident with the clinical and radiological investigations. These cases were associated with minimal collection of the fluid in the peritoneal cavity. In these cases

fluid was collected in the pouch of the Douglas. Negative tap may be because of minimal fluid in the peritoneal cavity particularly collected in the pouch of Douglas. The only drawback of the abdominal paracentesis encountered in our study was a negative tap. Hence, the negative tap should be dealt cautiously. The decision for further management should be based on clinical and radiological investigation. This was also a point highlighted by many workers. Baker *et al.* opined that, a negative paracentesis has no positive significance. If operation is indicated on clinical grounds, then, whatever may be, the fact that no fluid has been obtained from the peritoneal cavity must be completely disregarded.⁹ Stephens concluded that a negative tap does not prove that there is no significant intra-abdominal lesion and it must only be considered along with the patients overall clinical consideration.²³ In our series, we got the positive taps very often in the right lower quadrant. In a case of splenic laceration, we got positive tap on the left flank. In another case of ileal perforation, tap was positive in the left lower quadrant. This suggests that paracentesis does not necessarily indicate the probable site of the lesion. This has also been observation of Baker *et al.* and Giacobine and Siler.^{9,13} During our study, we encountered two hemorrhagic taps that were immediately recognized as false positive. This is due to the fact that intraperitoneal fluid will not clot on standing, whereas accidental puncture of the blood vessel will clot on standing. Nonclotting of the

Table 6: Positive tap and associated pathology

Nontraumatic group	Number of patients	Traumatic group	Number of patients
Gastric perforation	06	Splenic laceration	03
Duodenal perforation	09	Liver laceration	04
Ileal perforation	05	Jejunal perforation	02
Appendicular perforation	05	Mesenteric tear	02
Gall bladder perforation	01	Sigmoid colon perforation	01
Post anastomotic leak	01	Bladder rupture	01

Table 7: Negative taps and associated pathology

Pathology	Number of cases
Meckel's diverticulitis	01
Ileal perforation	01
Intussusception	01
Retro peritoneal hematoma	01

Table 8: Diagnostic accuracy of abdominal paracentesis

Abdominal emergencies	Number of cases	Positive tap		Negative tap		Diagnostic accuracy sensitivity	Diagnostic falseness of the test
		True	False	True	False		
Nontrauma group							
Visceral perforation						91.42%	8.58%
Stomach	6	6	-	-	-		
Duodenum	9	9	-	-	-		
Small bowel	6	5	-	-	1		
Appendix	5	5	-	-	-		
Gall bladder	1	1	-	-	-		
Diffuse peritonitis with suspected intra-abdominal pathology							
Intra-abdominal abscess	2	2	-	-	-		
Post anastomotic leak	1	1	-	-	-		
Meckel's diverticulitis	1	-	-	-	1		
Acute intussusception	1	-	-	-	1		
Acute cholecystitis	1	-	1	-	-		
Mesenteric ischemia	1	1	-	-	-		
Ileo-ileal knotting	1	1	-	-	-		
Intraperitoneal hemorrhage							
Ruptured ectopic pregnancy	1	1	-	-	-		
Trauma group							
Intraperitoneal hemorrhage						100%	0%
Liver laceration	4	4	-	-	-		
Splenic laceration	3	3	-	-	-		
Mesenteric tear	2	2	-	-	-		
Jejunal perforation	2	2	-	-	-		
Sigmoid colon perforation	1	1	-	-	-		
Retro peritoneal haematoma	1	-	-	1	-		
Bladder rupture	1	1	-	-	-		

peritoneal fluid can be explained by the fact that, peritoneum is lined by the mesothelial cell which are rich in plasminogen activators. The body's principal controlling mechanism of the clotting system is the plasma protein plasminogen. Plasminogen activators convert plasminogen to plasmin. This plasmin catalyzes the breakdown of fibrin to fibrin split products, inducing clot lysis.²⁴ The diagnostic accuracy of paracentesis in nontraumatic acute abdomen in the present study was 91.42% and traumatic group it was 100%. The overall diagnostic accuracy of paracentesis in the present study of 50 cases was 93.75% percent. This high index of reliability of paracentesis in cases of acute abdomen has also been emphasized by majority of workers. The various rate of diagnostic accuracy attained by various workers have been depleted Mahanta *et al.* 80%,¹⁸ Byrne 83%,²⁵ Giacobine and Siler 83%,¹³ Prout 86%,¹⁴ McPartlin and McCarthy 86%,¹² Rao *et al.* 89%,⁶ Lamke and Varenhorst 90%,¹⁰ Stephens 98%,²³ Bhatnagar and Asopa 100%.¹⁹

CONCLUSION

Our study reestablishes the simplicity, safety and accuracy of peritoneal tapping as a diagnostic aid in acute abdomen. It is particularly useful in centers where, radiological facilities do not exist, or where radiologists do not available at all time and in serious cases of acute abdomen who cannot be transported for radiography. It is also extremely useful for early diagnosis of complications following abdominal surgery. It is concluded that diagnostic abdominal tap is extremely reasonable diagnostic aid and can lead to improve surgical care of the patient with atypical acute abdominal pain.

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