

Hemoperitoneum: Conservative vs. Operative Approach

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Abstract: *Background:* Haemoperitoneum should be operated or not? - it is the dilemma that every surgeon come across whenever a case of hemoperitoneum arrives in emergency...!! Here we have tried to highlight the criteria which will be helpful in this regards. *Aims & Objective:* This study was carried out to evaluate the results and to find out the criteria for decision-making for conservative or operative management in a case of hemoperitoneum. *Methods:* 50 patients admitted during January 2017 TO January 2019 with hemoperitoneum were enrolled for the study and cases were evaluated for various variables like demographic data, injury classification, associated lesions, treatment, transfusions, morbidity and mortality, and hospital stay. *Results:* Out of total 50 patients, 20 patients (40%) was came in first 8 hours and operated. Other 15 (30%) patients were operated within 24 hours. surgeons had taken decisions conservative management for 15 (30%) patients but 5 patients were deteriorate and taken decision for operative management. Criteria which led to failure of conservative management and criteria which led to negative operative approach is discussed here. *Conclusions:* Conservative treatment is an adequate treatment in a great number of patients. Failure of conservative treatment did not show a higher incidence of complications or mortality but it should be performed in centers with experienced surgeons.

Keywords: conservative approach, criteria's for approach, hemoperitoneum, mortality, morbidity

1. Introduction

Hemoperitoneum is known as presence of blood in peritoneal cavity. Abdominal trauma is essential and the most common culprit for Hemoperitoneum (1). Most common cause of abdominal trauma with resultant haemoperitoneum is road traffic accidents (75 to 80%) followed by stab injuries. Understanding the mechanisms of injury is crucial in the management of a patient with abdominal trauma. (2, 3).

Apart from various abdominal organs, injury to other parts of body also plays part in ultimate outcome of patient. Many a time minor injury can be serious especially when involving solid organs of abdomen, so such cases should be thoroughly evaluated and managed accordingly. Other factors which influence outcome in solid organ injuries due to blunt abdominal trauma include extension of resuscitation hemodynamic instability, associated injuries to other parts of body and Glasgow coma scale. (4, 5)

In view of increasing number of vehicles and road traffic accidents, this study has been carried out to provide a deep glimpse in the management of hemoperitoneum due to abdominal trauma in context to study incidence with clinical presentation, extent of involvement of various intraabdominal organs, various modes of management including investigations either ultrasound or CT scan to detect intra-abdominal injuries and outcomes of conservative and operative management and to study various complications.

2. Aims and Objectives

This study was carried out to evaluate the results and to find out the criteria for decision-making for conservative or operative management in a case of hemoperitoneum.

3. Materials and Method

50 cases of hemoperitoneum with purely abdominal injuries were analyzed retrospectively to evaluate the criteria for conservative and surgical approach. Patient's data was collected who were admitted in SMIMER hospital, surat during JAN 2017 TO JAN 2019.

Inclusion criteria for conservative approach: (6, 7, 8)

1. Hemodynamically stable patient after initial resuscitation with systolic blood pressure of 90 mm of Hg or more
2. Pulse rate < 100/min
3. Radiological injury

Liver – grade 1, 2, 3 injuries with no active leak
Spleen – grade 1, 2, 3 injuries with no active leak
Kidney – grade 1, 2, 3 with no urine extravagation

Exclusion criteria:

1. Hemodynamically unstable patient with systolic blood pressure of less than 90 mm of Hg despite of resuscitation and pulse rate > 100/min
2. Patients with penetrating abdominal injuries.
3. X-ray abdomen standing showing free gas under diaphragm
4. radiological injury

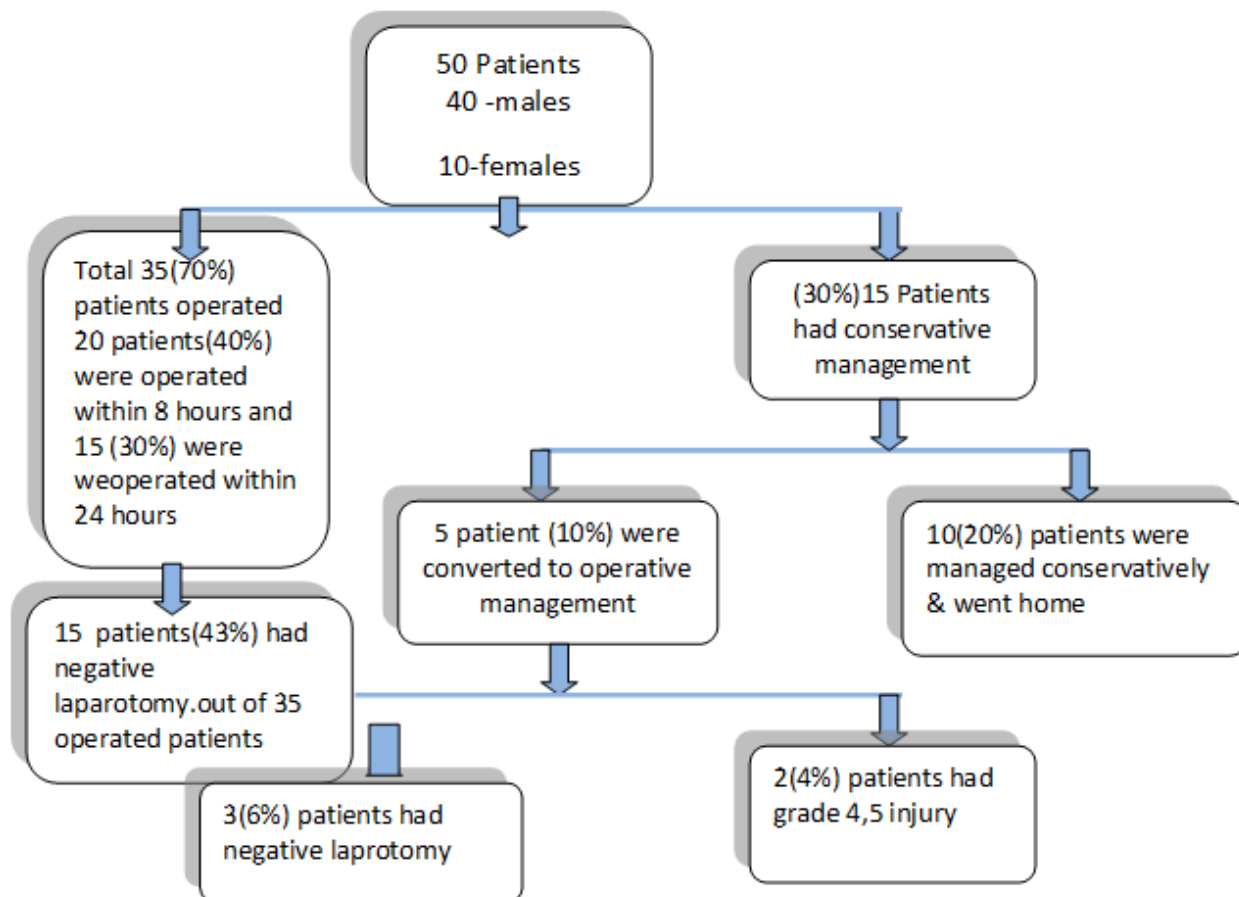
Liver – grade 4, 5 with active leak
Spleen – grade 4, 5 with active leak
Kidney – grade 4, 5 with urine extravagation.

- After initial resuscitation of trauma victims, routine blood investigations were carried out.
- Documentation of patients was done in hospital data.

- Depending on clinical findings, decision was taken for further investigations such as, diagnostic peritoneal lavage, x-ray abdomen standings and ultrasound.
- Each patient underwent paracentesis, sonography and CT scan. The decision for operative or nonoperative management depended on the outcome of the clinical examination and results of diagnostic tests.
- Patients selected for non-operative or conservative management were placed on strict bed rest, were subjected to serial clinical examination which included hourly pulse rate, blood pressure, respiratory rate and repeated examination of abdomen and other system.

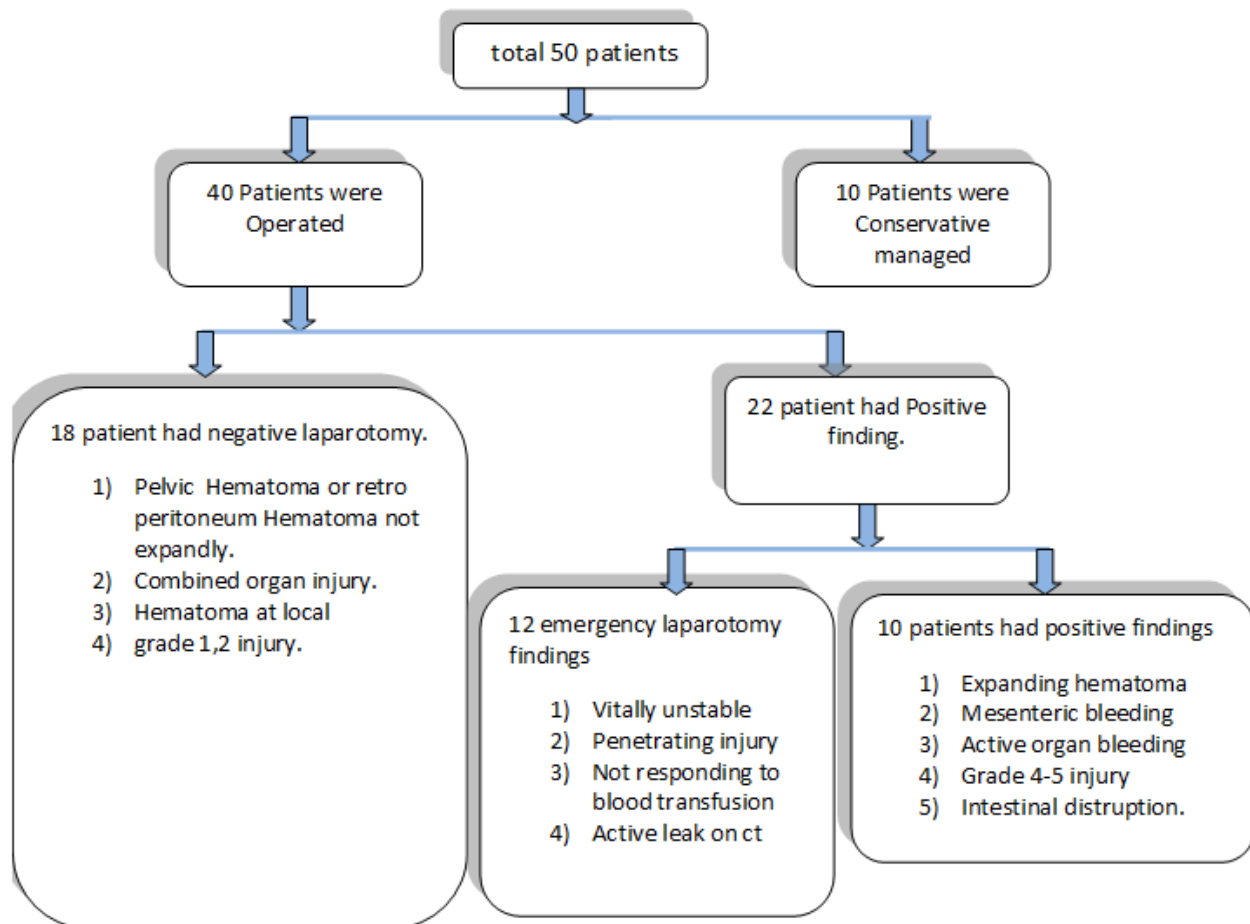
4. Results

- Out of 50 patients enrolled in study, 80% male and 20% female were admitted for abdominal trauma. Road traffic accidents (60%) are major culprit for solid organ injury in these patients, 24% were fall from height and 16% had history of assault. 20 patients were brought in hospital within 8 hours and operated. 15 patients (30%) were operated within 24 hours. More than 95% patients presented with one or more abdominal symptoms like pain, vomiting, and abdominal distention. Other presentation include hematuria, hematemesis and altered consciousness.



Out of 50 patients, 15 patients (30%) were managed conservatively. From 15 patients, 5 were deteriorate and unstable so they were managed by operative management. 3 patients (6%) had negative laparotomy and 2 patients (4%) had grade 4, 5 injuries. In our study total

40 (80%) patients were operated and 18 patients (36%) had negative laparotomy and 10 (20%) were managed conservatively.



If patient is not responding to blood products, hematocrit don't rise up, hypovolemia resist even after enough resuscitation and ct scan showing no active leak or no pedicle injury than it's the real dilemma, should go for exploration or not ??, According to what we studied in this study is that if multiple organ is injured, if grading of the injury is below 3 we can further give time to patient to respond because on exploration also we won't get anything that will save the patient's life but further conservative approach and observation with some time can save the patient from exploration. (8, 9, 10).

5. Discussion

This study consists of 50 patients who have developed solid organ injury due to various causes and brought to SMIMER hospital, Surat. If we look at the age and sex distribution of patients, in India Male is the major bread winner in society, while females are involved with household duties. (10) More than 90% patients are male and majority of patients belongs to third and fourth decade of life. Similar findings were found in study conducted by Davis et al. (11) Based on these findings it can be concluded that young and productive age group people are usual victims of non- penetrating abdominal trauma. Results of this study clearly show that the road traffic accident is the most common mode of injury (12). This is due to the rapid development in technology, in all fields including automobile industry where the first priority has been given to speed rather than safety. On comparison with national and international studies road traffic accident

forms most common mode of injury, incidence of road traffic as a cause of solid organ injuries in this study matches with that which was found in Indian study conducted by Khanna et al. (13) While Davis et al have found that in western countries road traffic accidents are culprit in nearly 2/3 cases of solid organ injuries which is more that findings of Indian studies. (11) Latent period is time required for patient to transfer for clinical management from time of injury. This time lag is due to the site of accidents, which are usually rural, and the time taken to transport them to the hospital and is very crucial in management. In our study most of the patients presented within 5 hours of injury, most probably due to improvement in transport and primary health care. Associated injuries plays major role in management of blunt abdominal trauma as it adds more morbidity and mortality due to wide range of injuries. Majority of patients (62 %) were not having associated injuries while thoracic injuries was found to be involved most often (14%) followed by orthopaedic fracture (12%). Associated extra abdominal injuries were found in 19 cases. The common extra abdominal injuries were extremity fractures, pelvic fractures, head injuries and chest injuries including rib fractures. In previous 2 studies it was found that thoracic injuries were most commonly involved.[5, 6] In the present study, abdominal pain was the most common presenting complaint accounting for 96%. But the signs and symptoms in abdominal injuries are notoriously unreliable and are often masked by concomitant head injuries, chest injuries and pelvic fractures. Significant injuries to the retroperitoneal

structures may not manifest signs and symptoms immediately and be totally missed even on abdominal x-rays and DPL predisposing the patients to grave consequences of missed injuries. In Davis et al study, 43% of patients had no specific complaints and no signs or symptoms of intra-abdominal injury when they first presented to the emergency room. But 44% of those patients eventually required exploratory laparotomy and 34% of patients had an intraabdominal injury. This emphasizes the importance of careful and continuing observation and repeated examination of individuals with non-penetrating abdominal trauma. Intra peritoneal aspiration is an easy method of diagnosing hemoperitoneum in doubtful cases. However, negative result does not rule out hemoperitoneum. In the present study, all 50 patients were subjected for intra peritoneal aspiration as against 44% in Davis et al (12) study. All 50 patients were subjected for ultrasound examination. Therefore ultrasound is more reliable in detecting solid organ injuries and free fluid in the abdomen. Emergency ultrasonography was found to be highly accurate and reliable mode of detecting solid organ injuries and hemoperitoneum. (13) In this study, the in non - penetrating abdominal injuries detected by ultrasound is about 94.6 %. Spleen (46%) was the most common organ to be detected on ultrasonography of abdomen followed by liver (38%), kidney (8%). Isolated pancreatic injuries are very rare and accounted only for 2% of patients. Combined injuries were found in 6% of patients. Spleen (46%) was the most common organ to be detected on ultrasonography of abdomen followed by liver (38%), kidney (8%). Isolated pancreatic injuries are very rare and accounted only for 2% of patients. Combined injuries were found in 6% of patients. In previous studies it was found that spleen and liver are 2 most common organs injured during blunt abdominal trauma.[11, 12] In present study 80% of patients were successfully managed with conservative management and 20% of patients eventually require laparotomy. Laparoscopy was found to be more effective and safe in comparison to open surgeries in hemoperitoneum with solid organ injuries in patients of blunt abdominal trauma. (14, 15) Increased trend towards conservative management is also reflected in other studies. (12, 14) This was due to earlier trend of operative management due to unavailability of better imaging and risk of missed injuries. Non operative management is gaining increasing acceptance mainly because of the easy availability of better imaging modalities like Ultrasound and CT scan. With the aid of CT scan it is possible to accurately grade the extent of injury to solid organs like liver and spleen. Minor lacerations and capsular tears, difficult to diagnose clinically can be easily demonstrated by CT scan and selected for non-operative management. Conservative management continues to have high success rate and with reduction in number of days for hospital stay in comparison to operative management.[6] Majority of patients who were treated conservatively had hospital stay of 1 – 5 days. The average duration of stay in conservative management was 6.5 days while in operative management it was 16.7 days. As seen above conservative management decreases the hospital stay hence morbidity. 19 out of 50 patients had associated injuries, which might have contributed to length of hospital stay. Blood transfusions

were given to 27 of the 50 patients during their hospital stay. No patient in our series was felt to have on-going haemorrhage from the injured organ requiring transfusions. The associated injuries that likely contributed to blood loss in transfusion group were mainly hemothorax, fracture pelvis, and extremity fractures.

6. Conclusion

Blunt trauma of abdomen is a major cause of morbidity and mortality in young and economically productive age-group. Road traffic accident is the major causative agent. (2)

With investigations like ultrasonography and computed tomography scan, there is a paradigm shift in the management of non-penetrating trauma abdomen from operative to non-operative mode. Conservative line of management is safe and effective in a hemodynamically stable patient without any signs of peritonitis.

If after conservative approach, patients suddenly start to worsen in terms of vitals, rather than going for operative approach we should consider further investigation (radiological) and then re-evaluate the management. polytrauma patients should be examined again to miss out fracture or injury.

Re imaging can give a good idea about if active bleeding restarted or not. These considerations can save us from the negative laparotomies. so we conclude that, vitally unstable patient with hemoperitoneum can be managed conservatively if Grade 3 or less injury, Intra abdominal abscess formation due to collected blood can make patient unstable and collective organ injuries not active bleeding.

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