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TRAUMA TO THE SPLEEN AND THE EVALUATION OF THE OPERATIVE VERSUS CONSERVATIVE MANAGEMENT IN ERBIL & BAGHDAD CITIES

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ABSTRACT

Background: Splenic injuries, particularly blunt ones, can cause significant tears in the spleen, with abdominal tenderness and distention in 50% of patients and hypotension in 25-30%. Older, less healthy patients may develop hemodynamic instability. Stable patients often experience left upper abdominal or flank pain. **Patients and Methods:** A retrospective study in Erbil city analyzed 60 patients from Rizgary, Erbil General, and Baghdad Teaching hospitals between January 2007 and January 2009. The study focused on Splenic Trauma evaluation and treatment options for male and female patients. **Results:** A study involving patients aged between one and sixty years found that splenic trauma is more common in males, with a male-to-female ratio of 2:1. Blunt abdominal trauma was common in road traffic accidents, falls from height, assaults, and other injuries. The majority of patients (58.3%) had blunt abdominal trauma, while 25.6% sustained penetrating injuries. Diagnosis of splenic injury was done through exploratory laparotomy, U/S scan, and CT scan. Associated injuries were common, with liver being the most common. Non-operative management was only used in 20% of cases, with 80% being treated operatively. Splenectomy was the most commonly performed procedure, with 44/60 patients (73.3%) having blunt abdominal trauma (71.4%) and 76% of those having penetrating injuries (76%). **Conclusion:** Splenic injuries are prevalent in Erbil governorate, with limited diagnostic modalities and 80% of splenectomy performed. Experience in conservative management and preserving procedures is limited, and laparoscopic surgery is not available.

KEYWORDS: Conservative Management, Spleen, Trauma.

INTRODUCTION

The spleen embedded in the loose areolar connective tissue with thin capsule; a low energy missiles, blunt injuries, and blast wave injuries may all cause considerable tears of the spleen.[1,2]

A blunt injury to the spleen presents more subtly and deceptively than other injuries. About 50% of patients have abdominal discomfort and distention, but only 25–30% of patients suffer with hypotension.[1,3] Compared to a younger, healthy patient, an older, less healthy patient is more likely to experience quickly escalating hemodynamic instability. But instead of being sent to the radiology department for a diagnostic, patients in unstable conditions are typically recommended for surgery, peritoneal lavage, or both. It is possible to diagnose splenic damage in patients with forceful abdominal trauma who are hemodynamically stable and have little to no symptoms.[2-4]

According to the prevalence of missed subcapsular hematoma in relation to more advanced degrees of splenic injuries, left upper abdominal or flank pain is the most common presenting complaint in stable patients. This pain is more likely to be related to the peritoneal irritation by the hemoperitoneum and the overlying soft tissue and/or bone injury. Clinical indications and symptoms of acute splenic damage can vary greatly, and patients might present in many different ways.[5,6]

Splenectomy was the standard of care for splenic trauma until recently, even for mild injuries. This aggressive approach was predicated on the idea that the spleen does not play a significant role in adulthood and that cautious

treatment may result in potentially fatal hemorrhage. A growing tendency toward conservative therapy and splenic salvage procedures has been brought about by growing appreciation of the spleen's involvement in immune function as well as overwhelming post-splenectomy sepsis (OPSI).[7] One However, given the potential for transfusion-induced viral infections and possibly fatal hemorrhage from delayed splenic rupture, this revised approach toward splenic conservation necessitates a thorough risk-benefit appraisal. Additionally, the growing availability of high-quality and dependable radiological imaging, such as magnetic resonance imaging (MRI), computerized tomography (CT) scanning, and ultrasound, has significantly enhanced the information available regarding the type of splenic injury. This may help determine which patients are suitable for conservative management, but at the expense of radiation exposure to the patient.[8] The purpose of the current study was to evaluation of the different methods used in the treatment of patients with splenic injury.

PATIENTS AND METHODS

A retrospective and prospective study design was adopted and performed in Erbil city in the period between the 1st of January 2007 and the 1st of January 2009. It includes as well cases collected from Rizgary & Erbil General teaching hospitals plus Baghdad Teaching hospital in the period of 20th Nov. 2008 to 1st Jan. 2009. Sixty patients were collected and analyzed. There were 40 male patients (66.6%) and 20 females (33.3%) with male: female ratio of 2:1. The evaluation form (Questioners) of the Splenic Trauma was designed. Treatment options for the patients were evaluated.

RESULTS

Patients ranged in age from one year old to sixty years old with a peak incidence in the ages 21 - 30 year include 17 patients (28.3%) as shown in figure (1).

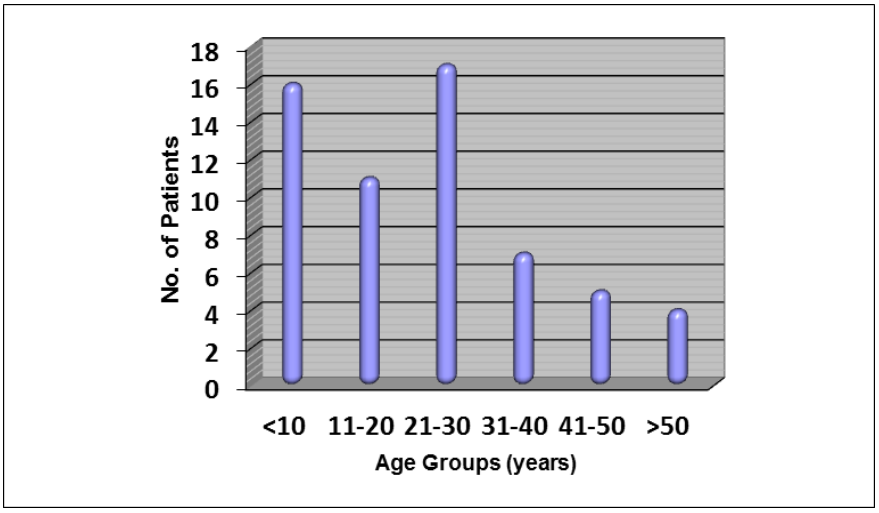

Figure (1): Age incidence of splenic injured.

Splenic trauma is more common in males. There was 40 /60 male patients (66.7%) 20/60 female patients (33.3%), with a male female ratio of 2: 1, as shown in figure (2).

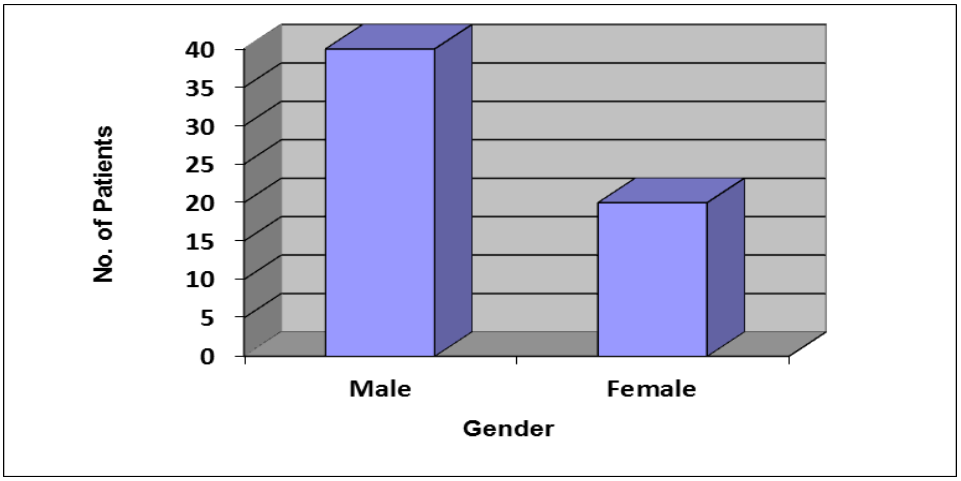

Figure 2: Gender incidence of splenic injured patients.

Blunt abdominal trauma was demonstrated in figure (3) which showed that road traffic accidents 25/35patients (71.4%) and fall from height 8/35 patients (22.9%), and 2/35 patients (5.7%) are the assaults and others. (Table No.3) 35/60 patients (58.3%) had blunt abdominal trauma, while 25/60 patients (41.66 %) sustained penetrating splenic injuries in which blast injury forming 1S/25 patients (60%) and gunshot wounds in 10/25 patients (40%).

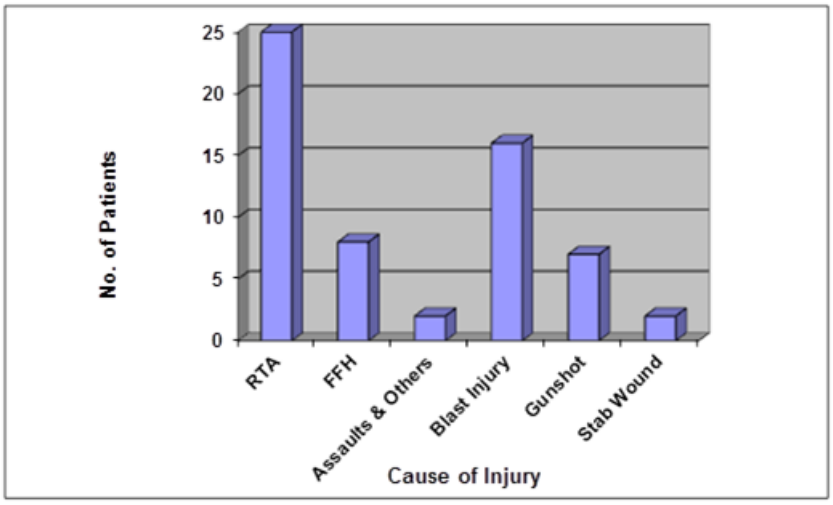

Figure (3): Causes of splenic injuries.

Diagnosis of splenic injury: is a leading cause of splenic injury in In this series 49 /60 patients (81.7%) where diagnosed by exploratory laparotomy, U/S scan in 6/60 patients (10%), CT Scan was positive in 5/60 patients (8.3%). Diagnostic laparoscopy was not performed to any patient in this study (figure 4).

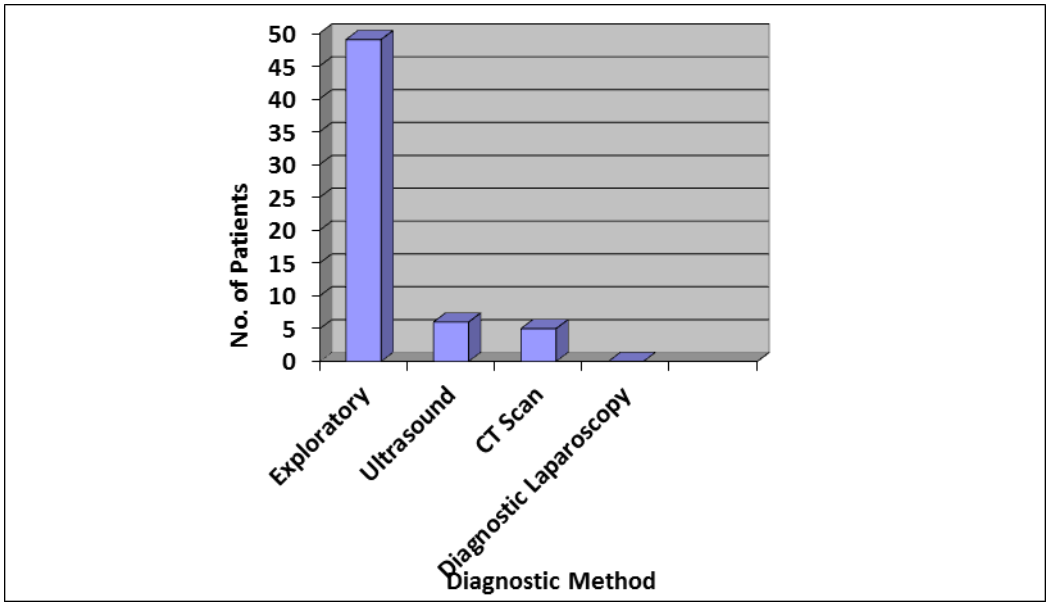

Figure (4): Diagnosis of splenic injured patients.

Splenic injuries were graded and showed that 10/60 patients (16.7%) grade I & 4/60 patients (6.7%) grade II & 18/60 patients grade III (30%), 9/60 patients grade IV (21.7%), 13\60 patients (21.7%) grade V, and about 6/60 patients (10%) with unclassified grading as in figure (5).

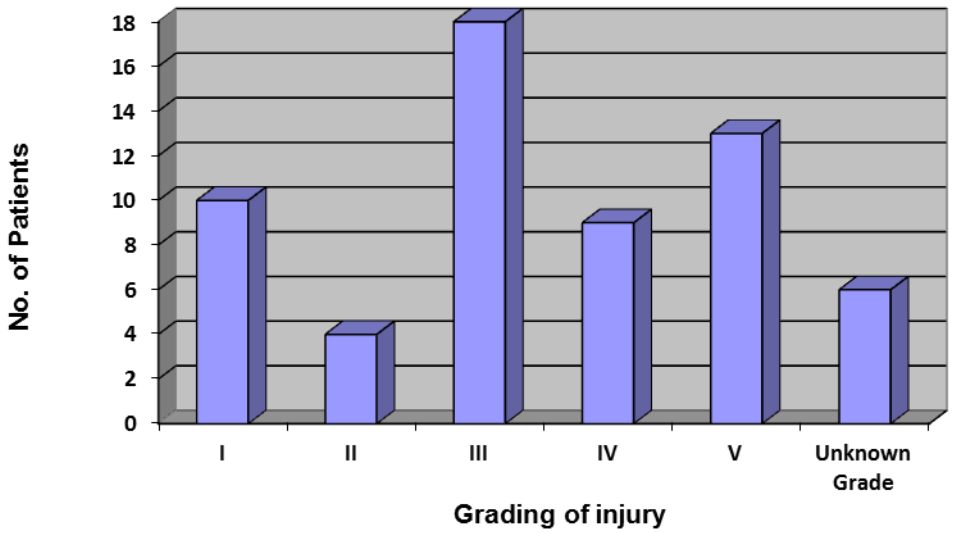

Figure (5): Grades of splenic injuries.

There were related injuries; 20/60 patients with blunt trauma (33.3%) or 25/60 patients (83.3%) had related injuries. and 30 out of 60 patients (50%) who suffered penetrating injuries also had related injuries (figure 6). In 6 out of 60 patients (10%), liver damage is the most frequent related injury (figure 7).

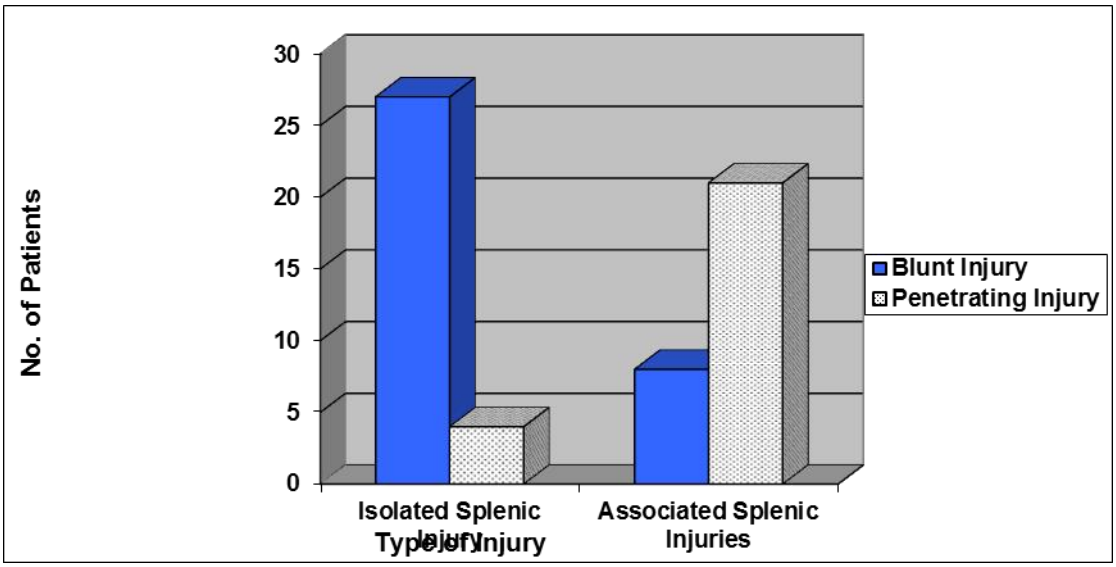

Figure (6): Type of injury in relation to mechanism.

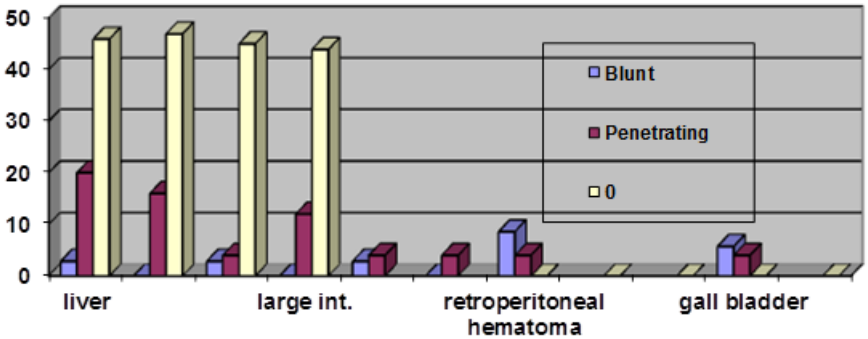

Figure (7): Associated injuries in splenic injured patients (abdominal).

Regarding the non-operative management, this study only 20% of patients were treated conservatively with success rate of 100% and 48/60 (80%) were treated operatively. All of the conservative cases sustained blunt or penetrating splenic trauma with estimated grade I splenic injury. Six cases of them diagnosed by ultrasonography and the other 5 cases diagnosed by CT - Scan. They are admitted to the surgical ward and followed up closely, apart from two cases Died due to septicemia; no other complications reported, except mild chest infection (figure 8), the mean hospital stay was 15+3 days.

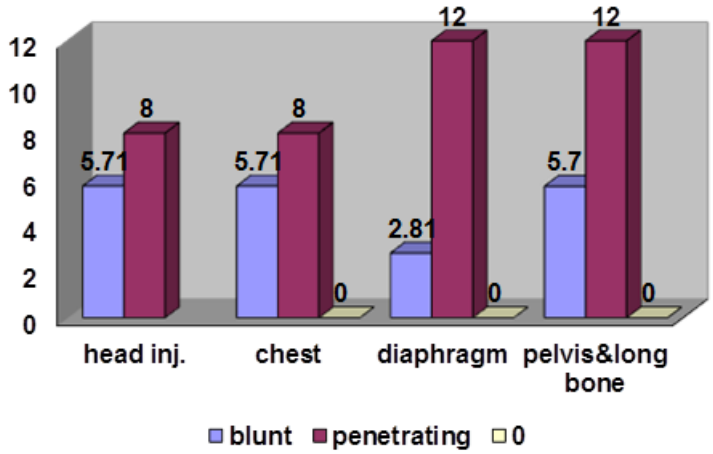

Figure (8): Associated injuries in splenic injured patients (extra-abdominal).

Splenectomy was the most commonly performed procedure for the management of splenic injury. 44/60 Patients (73.3%). This represents 25 /35 patients with blunt abdominal trauma (71.4%) and 19/25 patients (76%) of those sustained penetrating injury (figure 9).

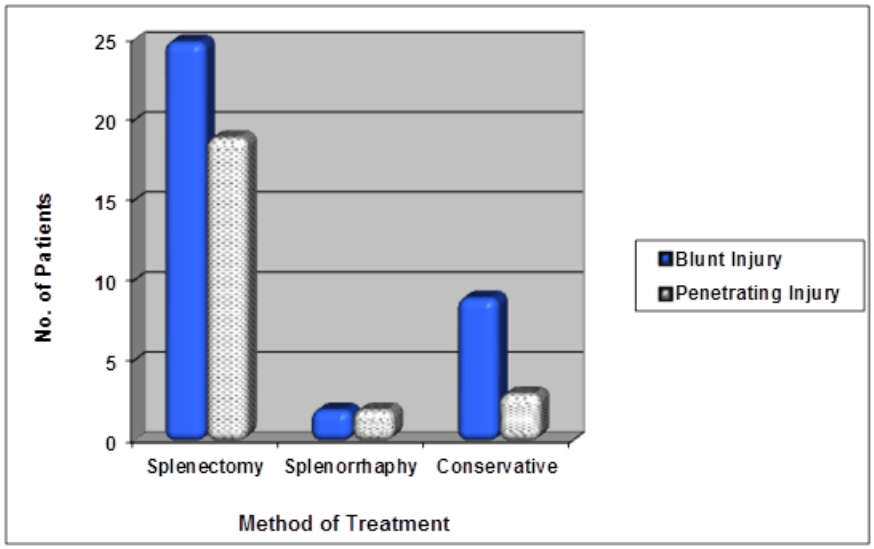

Figure (9): Mechanism of the injury versus treatment.

DISCUSSION

This study demonstrate considerable variation in the management of splenic trauma in general. We classify splenic management into 3 types: emergency laparotomy, conservative for short period & then Laparotomy, and conservative management only. Around 80% of splenic trauma cases were treated operatively, and the remainders 20% treated by conservative approach.

Most of our patients were younger than 30 years (73.3%) which is comparable to UTIMO et al[9] and Steele et al.[10] male /female ratio is 2:1.

Most common cause of splenic injury was blunt abdominal trauma 58.3%, which is comparable to Steele et al[10], while Olivero et al[11] showed significant difference 83.3%. Abdominal associated injuries seen more with penetrating splenic trauma (84%), only (22.8%) for Blunt splenic trauma, whereas extra-abdominal injuries were related more frequently to blunt injury in 71.9% of the patients. These figures different

than a study performed by steele et al.,[10] which showed an overall associated injuries associated with blunt trauma among 63% of patients as well as penetrating trauma in 71% of patients.

Both diagnostic laparoscopy and DPL were not used in this study; 49 patients were graded at laparotomy, while others were graded by abdominal CT scan and ultrasound investigation. Fabian et al.[12] found that diagnostic peritoneal lavage is the preferred method for hemodynamically unstable patients; in another study conducted in Turkey, 64.8% of patients were diagnosed by diagnostic peritoneal lavage, while 10.6% of patients only underwent exploratory laparotomy.

In contrast to a research by Nebraska et al.[13] that revealed a peak incidence in grade III splenic injuries (53.4%), the study's highest percentage of splenic injuries (30%) was in grade III splenic injuries. Splenectomy was the most prevalent surgery in this series, occurring in 44 out of 60 patients (73.3%), but more recent data have shown that the incidence of splenectomy has decreased from over 91% in the late 1970s to less than 60%.[13–15]

Splenorrhaphy was performed in 4 patients only (6.6%) with significant difference from other studies Guliano and Um[16] reported that splenorrhaphy performed in 35.9% of patients and reoperation not required. Another series reported by Pachter et al.,[17] showed that splenorrhaphy was performed in 88% of patients with stab wounds and 65% of those who suffered gunshot wounds and in 51% of patients sustained blunt trauma.

A recent research by Mustafa and Keramedas[18] found that while splenectomy was carried out in 37.8% of patients with splenic damage, suture repair of the spleen was effective in 62.2% of cases. The possibility of postoperative bleeding from the reconstructed spleen is one of the main worries with splenorrhaphy. However, in their evaluation of a 9-year experience with splenorrhaphy, Felicious et al.[19] reported that 20 out of 997 patients (2%), required reoperation for rebleeding.

Splenectomy by minimal access surgery (Laparoscopic splenectomy) is a new trend and advent in treating injured spleen, in this study unfortunately no patient was treated by this technique. All patients treated with splenectomy or splenorrhaphy had a closed drainage system after splenectomy. The matter has long been contentious. When drainage was used, Cohn et al.[20] reported an eleven-fold increase in local infectious consequences. The most common postoperative pulmonary complication, occurring in 22% of patients, was atelectasis. Twelve patients (20%) had conservative treatment, with a mean hospital stay of 15±3 days, according to non-operative management.

According to studies by Steele et al.[10] and Guliano and Um and others[16,21,22], the most frequent respiratory consequence was lung infection, with overall rates of respiratory problems of 26% and 30%, respectively. Nine patients had wound infections (16.6%). This figure is considerable in compared to the study of Steele and LIM which showed an incidence of wound infection of 6%. Pulmonary embolism occurred in one patient (1.7%). This number is similar to a series by Ziemski et al.[23] that found that 3% of patients experienced a pulmonary embolism in the first few days following a splenectomy.

CONCLUSIONS

In the governorate of Erbil, splenic injuries are a frequent surgical concern. New diagnostic modalities, particularly CT scans, MR1 scans, and even U/S scans, are in short supply in emergency settings. Splenectomy still is the most commonly performed therapeutic procedure in this study was 80%. limited experience in conservative management and splenic preserving procedures. Regarding laparoscopic splenic surgery in Erbil city was not done.

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