European Journal of Clinical Medicine
www.ej-clinicmed.org

Incidental Traumatic Liver Laceration Diagnosed at Caesarean Section in 37-Year-Old Patient at Kitwe Teaching Hospital in Zambia

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ABSTRACT

Trauma is leading cause of non-obstetric maternal and perinatal mortality and affects 7% of pregnancies worldwide. We present a 37-year-old pregnant woman, who had a World Society of Emergency Surgery (WSES) grade II or American Association for the Surgery of Trauma (AAST) grade III liver injury with hemodynamic instability caused by blunt trauma to the abdomen, resulting in an incidental liver parenchymal laceration discovered only at Caesarian section five days later. Liver laceration was treated with perihepatic packing and definitive surgery was done by direct liver repair. We believe this is the first case to be reported in Zambia.

Keywords: Liver laceration in pregnancy, incidental liver laceration at cesarian section, liver laceration.

Published Online: June 15, 2021

ISSN: 2736-5476

DOI:10.24018/ejclinicmed.2021.2.3.12

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I. Introduction

Trauma is leading cause of non-obstetric maternal and perinatal mortality and affects 7% of pregnancies worldwide [1], [2] Traumatic liver parenchymal injuries can be blunt or penetrating and/or open or closed [3]. We present a 37-year-old pregnant woman, who had a World Society of Emergency Surgery (WSES) grade II or American Association for the Surgery of Trauma (AAST) grade III liver injury with hemodynamic instability caused by blunt trauma to the abdomen, resulting in an incidental liver parenchymal laceration discovered only at Caesarian section five days later. The indication for caesarian section was severe preeclampsia at term. Major liver injury causes 50-54% mortality due to bleeding within 24 hours after admission, and perioperative mortality of 80% for those taken to theatre for hemorrhage control, and these outcomes are irrespective of early diagnosis, advances in surgical treatment and resuscitation modalities [3]. We believe this could be the first case to be reported in Zambia.

II. Case Report

A 37-year-old, gravida 5, para 4, was referred to Kitwe Teaching Hospital, from a District hospital, for incidental Liver laceration diagnosed intra-operatively during caesarean section done for severe preeclampsia in second stage of labor. The referral letter stated that the patient fell into a ditch and sustained right upper quadrant pain 5 days before the index caesarian section, was evaluated at district hospital for the abdominal pain with an obstetric abdominal scan that revealed that the pregnancy was normal, and baby was viable without report on the state of other abdominal organs. She was treated with analgesia for the abdominal pain and discharged. The reason for referral was failure to control bleeding at cesarian section, as bleeding was noted to originate to a liver injury after converting to midline laparotomy, and patient developed hemorrhagic shock grade IV. The patient's abdomen was packed, temporarily closed and patient referred.

At Kitwe Teaching Hospital, patient was evaluated and noted to have ongoing abdominal bleeding causing hemorrhagic shock. Relaparotomy after initial resuscitation, revealed 1200 ml hemoperitoneum that was suctioned, transverse anterior liver laceration involving segment 5 and 6 of the right lobe of liver spanning 12 cm in length and about 3 cm deep graded as grade 3 liver laceration, with active bleeding. Damage control surgery was performed with perihepatic packing using 12 abdominal swabs, as patient developed Disseminated intravascular coagulopathy (DIC). Patient received 3 units of fresh whole blood intraoperatively and the lowest blood pressure recorded at end of surgery was

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53/33 mmHg.

The patient was evaluated in ICU the following morning, 24 hours after second laparotomy and noted to have blood pressure within normal limits despite lack of blood and blood products for additional transfusion. She developed body hotness and a blood slide done diagnosed incidental malaria. She was immediately commenced on quinine treatment, in addition to the intravenous antibiotics.

Re-look laparotomy (third laparotomy after caesarian section) done 48 hours after second relaparotomy, revealed that hemostasis was not achieved by the 12 abdominal packs left in the abdomen after second laparotomy, and therefore 2 new abdominal packs were inserted to achieve hemostasis (implying patient now had 14 abdominal packs left in-situ). Patient received 2 units of fresh whole blood after the third laparotomy. The patient was taken back to ICU for assisted mechanical ventilation. She regained consciousness, blood pressure normalized even though oxygen saturation (SPO2) ranged between 90% and 94% on assisted ventilation. Her liver enzymes revealed Aspartate aminotransferase (AST) of 1180U/L and Alanine aminotransferase (ALT) of 987 u/l showing significant liver parenchymal injury (the rest of the parameters where normal). Her haemoglobin was 7.6 g/dl and platelets of 88 measured after intraoperative transfusion.

Re-look laparotomy (fourth laparotomy after caesarian section), the hospital consulted a Gastrointestinal and Hepatobiliary-Pancreatic Oncology surgeon to help the local team. The abdominal incision was converted to a modified Makuuchi incision. Coincidentally, on opening the abdomen, patient suffered a cardiac, but resuscitation was successful and blood pressure was maintained by ionotropic support using adrenaline. Anaesthetist gave a go ahead to surgeons, to proceed with operation. Liver mobilization was done by release of falciform and triangular ligaments. Patient had abdominal packs and sutures of liver to anterior abdominal wall which were all released to enable exploration. All abdominal packs were removed, and all previous liver repairs released. Intra-operative liver ultrasound done revealed that the major vessels (hepatic veins and portal veins) were intact, however, segmental portal branches to segment 6 were damaged resulting in patchy ischemic necrosis without active bleeding. Cholecystectomy was performed, and a water leak test to check for bile leak, done was negative. The liver repair was revised as shown in figure1, two drains were inserted in Morison's pouch and behind segment 7, and abdomen closed in-layers after lavage. The blood pressure remained low throughout the operation, and it ranged between 73/45 to 65/39 mmHg.

Post-operative recovery after fourth laparotomy was uneventful. Vitals normalized and adrenaline support was stopped and extubation was done, on day 2. Patient opened bowels with return of bowel sounds however patient had severe sepsis with resolving septic shock and renal dysfunction NGT was removed. Oral sips were introduced on day 3 which patient tolerated well. On day 4 light diet was introduced. Day 5 patient continued making progress towards recovery and ambulation was started. On day 6, patient suddenly was discovered dead in her sleep. Postmortem was denied by relatives to establish cause of death.

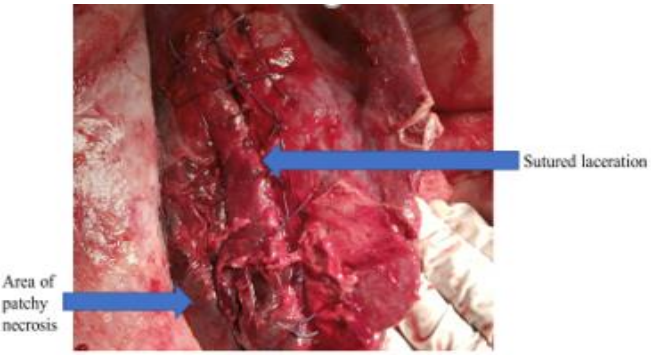

Fig. 1. Showing Transverse liver laceration, involving segment 5 and 6 of the liver with controlled haemorrhage.

III. Discussion

Our patient suffered an AAST grade III liver parenchymal injury due to a fall in a ditch while carrying a term pregnancy and despite presenting early to a health facility with access to abdominal sonography and with complaints of right upper quadrant pain and tenderness, liver laceration was completely missed. It is documented that patients with delayed presentation and hemodynamic stability can be conservatively managed regardless of the grade of parenchymal liver injury or presence of hemoperitoneum as the preferred treatment modality [3], [4]. This would explain how our patient survived 5 days with liver parenchymal laceration, before presenting in labor.

Cesarian section was ordered for severe preeclampsia in second stage of labor and progressed well to a male infant with Apgar (Appearance, Pulse, Grimace, Activity, and Respiration) score of 7/10 at 5 minutes. However, the failure to achieve hemostasis and hemodynamic instability was reason for conversion to a formal midline laparotomy and on discovering the incidental liver parenchymal laceration, perihepatic packing done and patient was referred to a tertiary hospital. This action to refer the patient was done to facilitate hemorrhage control and massive transfusion [3]. Failure to control hemorrhage leads to catastrophic lethal triad of coagulopathy, acidosis, and hypothermia [3]. Damage control surgery was done to control hemorrhage by directly controlling liver parenchymal bleeding and prevent biliary leak complications, then perihepatic packing can be safely done [1], [3], [5]. Note that arterial bleeding is never arrested by perihepatic packing, as arterial bleeding requires direct ligation to stop bleeding [3], [5]. Two damage control surgeries were done because of failure to control bleeding, as the ligations on the liver could not achieve hemostasis. However, hemostasis on the liver laceration was achieved after involvement of a local expertise in the 4th laparotomy.

During surgical treatment, our patient was discovered to have incidental malaria and subsequently placed on quinine treatment. While severe malaria can cause bleeding or disseminated intravascular coagulopathy (DIC) with high mortality [6], this would-be difficulty to distinguish from coagulopathy caused by liver parenchymal injury [3].

Patient had raised serum aspartate aminotransferase (AST) and alanine aminotransferase (ALT) as markers of liver injury [3]. There was shortage of blood and blood products for our patient and therefore the correction of lethal triad was a challenge, and such cases have been reported to have poor patient outcomes [3]. Our patient had 2 damage control

laparotomies with perihepatic packing due to hemorrhage that was difficulty to control. However, these perihepatic packings when left in-situ more than 48hours carry the danger of infection and rebleeding [3], [5].

Our patient had severe sepsis and suffered cardiac arrest on the 4th laparotomy. The patient did not recover fully from the sequelae of sepsis, and the laboratory preliminary culture results had no growth, to inform clinicians on the choice of antimicrobial susceptibility and resistance profile. The lessons we learn from this patient here is proper patient evaluation unlike the liver injury that was missed even with sonography. The other lesson is to involve local expertise early during treatment and at the time of definitive surgery. Availability of local surgical expertise to perform definitive liver surgery has been shown to improve patient outcomes [3], [5].

IV. Conclusion

We managed a patient with incidental traumatic liver laceration discovered during caesarian section and coincidental malaria. Hemorrhage control was achieved by perihepatic packing and liver repair. Sepsis and hemorrhage control were challenging in managing this patient.

References

[1] Icely S, Chez RA. Traumatic liver rupture in pregnancy. Am J Obstet Gynecol. 1999;180(4):1030–1.

[2] Sakadamis AK, Ballas KD, Rafailidis S, Alatsakis MB, Sounidakis N, Grolios G. Penetrating Liver Trauma in Pregnancy: Nonoperative Treatment. Eur J Trauma. 2003;29(5):324–6.

[3] Doklestić K, Stefanović B, Gregorić P, Ivančević N, Lončar Z, Jovanović B, et al. Surgical management of AAST grades III-V hepatic trauma by Damage control surgery with perihepatic packing and Definitive hepatic repair-single centre experience. World J Emerg Surg. 2015;10(1):4–11.

[4] Ralston SJ SS. Liver hematoma and ruptire in pregnancy. Semin Perinatol. 1998;(22):141–8.

[5] Morales Uribe CH, Arenas López C, Correa Cote JC, Tobón Franco S, Saldarriaga MF, Mosquera J, et al. Surgical Treatment of Blunt Liver Trauma, Indications for Surgery and Results. Cirugía Española (English Ed. 2014;92(1):23–9.

[6] Jain V, Afreen K, Kumari J, Mir T, Wani B, Bhushan R. Disseminated intravascular coagulation presenting as symmetrical peripheral gangrene: A case report. J Med Case Rep. 2019;13(1):4–7.