

Jejunal Perforation Following Electric Burns- A Case Report

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Abstract: A two and a half year old child sustained low tension electric burns in left thigh and abdominal wall leading to multiple jejunal perforations. Segmental resection followed by primary anastomosis was done with delayed repair of abdominal wall defect. The baby recovered uneventfully.

Key Words: Jejunal perforation, electric burn, abdomen.

I. Introduction:

Electrical injury is produced by the conversion of electric energy into heat while passing through tissue. Electrical injuries can be grouped into low-voltage injuries (voltage less than 1000 volts) or high voltage injuries (voltage more than 1000 volts). Clinical manifestation can range from no apparent injury to serious systemic damage. Intra-abdominal injury associated with electrical injury is difficult to diagnose. Abdominal visceral injuries can be a direct consequence of the passage of electrical current through the abdominal viscera or a complication of electrical injury, such as Curling's ulcer. Abdominal visceral injuries consequent to passage of electric current are commonly associated with high-voltage injuries where the contact point is directly over the abdomen¹.

II. Case report:

A two and a half year old female child sustained electric burns in her left thigh and left middle part of abdomen by accidentally falling on an opened electric wire of domestic line (Low voltage injury). She was brought to the hospital 3 days after the incident when the baby was crying excessively. On examination, the necrosed skin with eschar on top was found in the left upper part of thigh. There were three more patches of injury in the left lumbar region (Figure 1).



Figure 1 showing electric burnt abdominal wall with exposed bowel.

In one area the bowel was seen protruding and also frank leakage of bile was noted from there. There were two more areas of injury involving the abdominal wall upto the muscles, but the peritoneum was found intact later on during surgery. The patient was immediately posted for surgery. The abdomen was opened through a right transverse infra-umbilical incision. The jejunum was found burnt and perforated in two areas (Figure 2).



Figure 2 showing burnt jejunum with perforation.

Segmental resection of the jejunum including both the perforations was done and primary end to end anastomosis was done. Rest of the viscera were found to be normal. The burnt areas were debrided generously and only the peritoneum along with posterior rectus sheath was closed. The thigh wound was debrided and closed primarily after raising skin flaps from the surrounding areas. The abdominal wounds after regular daily dressing was left to granulate and was closed with split thickness skin graft after one month. The baby was discharged after around one and half month of hospital stay.

III. Discussion:

Abdominal visceral injury associated with low-voltage current is a rare phenomenon¹. The usual form of direct gastrointestinal injury following high-tension electric injury is widespread necrosis of the colon or the small intestine. It usually occurs in combination with extensive electric burns of the overlying abdominal wall². High voltage electrical burns may involve intra-abdominal viscera with or without an abdominal wound. The risk of such an involvement is much higher when a wound is present. Depending upon the amount of heat produced vapourization of tissues may occur. If it includes part of the peritoneum, visceral damage is revealed immediately. If it does not occur to that extent, necrosed tissues remain in continuity and visceral involvement remains concealed until slough separates³.

The prognosis is related to early diagnosis of the associated visceral injury. It is recommended that the debridement should be undertaken at 2-3 days postburn. Laparotomy is indicated if part of the peritoneum is also debrided. Reconstruction of the abdominal wall may be a formidable task. Among the options available, pedicled muscle and musculocutaneous flaps seem to be ideally suited for the purpose³. Zhong DC⁴ reported 5 cases of severe high voltage electrical burn with intestinal perforations that were successfully treated. They showed obvious whole layer necrosis of abdominal wall, exudation, intestinal prolapse and peritonitis. Resection of the small intestine with necrosis and perforation and end-to-end anastomosis were done in 4 cases (5 regions). Colon resection and colostomy were done in 2 cases, and immediate end-to-end anastomosis in 2 cases. Bowel segment with external fistulae was left in 1 case (2 regions). If the abdominal wall defect could not be sutured directly, skin grafting on the residual tissue and omentum may be temporarily effective. And myocutaneous pedicle flap should be repaired secondarily. After operation, parenteral nutrition and anti-infection are important for patient recovery. No complication occurred in this group.

Honda T et al reported a 13-year-old male receiving high-voltage electrical burn with a resultant large direct wound on the upper abdomen involving the full-thickness of the abdominal wall, including the peritoneum. Early debridement, exploratory laparotomy and temporary restoration of the excised abdominal wall with a fascial prosthesis were carried out at 6 h post-burn. The bilateral upper and right lower limbs were amputated on the 10th post-burn day. The patient developed a 4x4 cm duodeno-cutaneous fistula on the 28th post-burn day, but was free of peritonitis. After 5 months of the conservative treatment, the fistula closed, and the abdominal wall defect was reconstructed with a free latissimus dorsi musculocutaneous flap. One month later, the patient was discharged following an uneventful recovery⁵.

Intestinal fistula is an uncommon complication of electric burns. The authors report the case of an 11-year-old child who sustained accidental burns from a high-voltage electric current and had a fecal fistula on the 19th post-burn day, which was found to be from the transverse colon. Conservative management of the fistula with total parenteral nutrition for 23 days resulted in complete healing⁶.

IV. Conclusion:

Hollow viscus perforation is common sequelae of high tension electric burns, but can occur even in low tension electric burns. A prompt diagnosis and timely intervention usually results in favourable outcome.

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