International Journal of Contemporary Pediatrics
Basak A et al. Int J Contemp Pediatr. 2019 Nov;6(6):2723-2725
http://www.ijpediatrics.com
pISSN 2349-3283 | eISSN 2349-3291

DOI: http://dx.doi.org/10.18203/2349-3291.ijcp20194763

Case Report

A rare form of domestic accident: blast abdominal injury with evisceration of abdominal viscus

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Received: 30 August 2019
Revised: 05 September 2019
Accepted: 03 October 2019

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ABSTRACT

Evisceration of abdominal viscus following "Flowerpot firecracker" (tubri) blast injury to the abdomen is a rare but dangerous form of domestic accident. Lack of knowledge and non-compliance of safety measures is the major reason for firecracker eventualities. A 10-year male child presented three hours post-injury with a wound over the upper abdomen. On examination there was evisceration of part of stomach along with colon through supraumbilical abdominal wound. Resuscitation and repair following exploratory laparotomy performed. Patient recovered well postoperatively. Public awareness and safety measures need to be taken to prevent the fatal outcomes of firecracker misuse.

Keywords: Blast abdomen, Evisceration of abdominal viscus, Exploratory Laparotomy, Firecracker injury, Gastric Perforation, Safety measures

INTRODUCTION

Firecracker-related injuries have been identified as one of the important causes of burns. Around Diwali, Christmas and New Year, these types of blast injuries result in hundreds to thousands of damages annually.[1]

But Intra-abdominal visceral injury following a firecracker explosion is an uncommon event, hence the need to communicate this to the scientific community. We report a case of firecracker injury in a boy with evisceration of abdominal viscus (stomach and colon). The mechanism of injury, diagnostic techniques and management of the patient are discussed in this case report.

CASE REPORT

A 10-year male child from Midnapore, West Bengal, presented to emergency at midnight with history of a "Flowerpot firecracker" (tubri) blast injury to the abdomen. He presented three hours post-injury with a wound over the upper abdomen and abdominal pain. On systemic examination, the patient had cold extremities, tachycardia and hypovolemia (Blood pressure- 80/60 mm Hg). The abdomen was rigid and tender. On local examination protrusion of part of stomach along with colon through supraumbilical region was noted (Figure 1 and 2). There was no vomiting, no hematemesis, no injury to any other part of the body. Resuscitation was done with 5% dextrose in 0.9% normal saline. Gastric drainage was achieved with nasogastric tube placement. Viscus wrapped in saline soaked gauze. Intravenous prophylactic antibiotic was administered. Exploratory laparotomy was performed through 2 cm opening at anterior abdominal wall after reduction of eviscerated stomach and part of transverse colon. Single gastric perforation (2×1.5cm) was noted at anterior gastric wall near lesser curvature and was repaired. A small part (2 cm) of liver margin lacerated which was left without any intervention. Thorough search for other injury performed followed by warm saline lavage of the peritoneal cavity and wound closure in layers with drain. Immediate

postoperative condition was satisfactory (Figure 3). Orally clear fluid was allowed on 3rd post-operative day. Normal diet was allowed on 6th post operative day. Patient was discharged on 7th post operative day.

Figure 1: Showing eviscerated stomach and part of transverse colon with isolated anterior gastric wall perforation.

Figure 2: Blast abdominal injury with evisceration of abdominal viscus.

Figure 3: Post-operative day 6 - showing laparotomy wound prior to discharge.

DISCUSSION

Firecrackers are responsible for burns, contusion and laceration injuries to hands, fingers, eyes, head and face.[1-4] The easy availability of an array of perilous fireworks, lighting of fireworks in close proximity to the body, their unsupervised use, and the lack of physical coordination among young children using them out of curiosity or for experimentation are some of the reasons cited for causing firecracker accidents.[5] The attraction amongst children and youth with fire crackers is because of their sparkle, burst of colors, frightening sounds and noises produced through explosion of flammable materials. Firecracker injuries in the USA affected approximately 10,000 persons annually from 1980 to 1989 as per the National electronic surveillance system, while during 1990-2003, 85,800 pediatric firework related injuries were treated.[6,7] In the UK, the number of firework related injuries peaks during Halloween and Night GF.[8] In Denmark, over a 12 years period from 1995-1996 to 2006-2007, there were 4447 patients of firecracker related injuries during 2 days of New Year.[9] Both the developed and developing countries are facing the problem of firecracker related injuries in large numbers. These are the national statistics of different countries. Safdarjung hospital, only one of the many, though the largest in the Delhi national capital region catering to most of the firecracker related injuries, has encountered 1373 patients over a 9 years period.[1] In the USA, high incidence of firework related injuries among children has been reported. In different reports, children below 15 years formed 40-50% of the victims.[10] It was observed that the states in USA which are liberal in allowing fireworks for personal use have 7 times greater incidence than the states where more restrictions are imposed.[11] It has been suggested that public fireworks should be encouraged and fireworks for individual use should be banned.[12] The poor hemodynamic state of the patient on admission was due to the delay in arrival at the hospital and hemorrhage from the walls of the gastric perforation during this period, which was documented intra-operatively as hemoperitoneum. Debridement and repair usually suffice for gastric perforations unless the patient has high velocity injuries causing extensive devitalization, in which case resection of the stomach may be required. Lack of knowledge and non-compliance of safety measures are the major reason for firecracker eventualities which have a potential to cause grave penetrating abdominal injuries in addition to causing burns, contusions and lacerations, if they are used irresponsibly and without parental supervision. A detailed history, examination and a high index of suspicion would facilitate the diagnosis and management of such patients with firecracker injuries. Regulations, public awareness and safety measures need to be taken to prevent the misuse of firecrackers, which may have potentially fatal consequences.

Do's and Don'ts related to Firecrackers[13]

- Do light firecrackers outdoors, as they are potential fire hazards

- Do light one firecracker at a time
- Do not hold a firecracker while lighting it
- Do not pick up failed firecrackers, they can still explode
- When lighting fireworks like a fountain, do not bend directly over the pyrotechnic devices
- Do not throw firecrackers at passing people or vehicles
- Do not allow children to hold firecrackers

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

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Cite this article as: Basak A, Ghosh A, Mishra PK. A rare form of domestic accident: blast abdominal injury with evisceration of abdominal viscus. Int J Contemp Pediatr 2019;6:2723-5.