BLUNT TRAUMA TO THE TRACHEA

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SUMMARY

A 5-year-old child sustained blunt trauma to the cervical trachea. Diffuse subcutaneous emphysema of the neck and thorax developed rapidly. Anaesthesia was induced with halothane through a face-piece and the patient breathed spontaneously until the lesion had been evaluated. This course is advocated in the management of such injuries.

Paré (1840) was the first to report the clinical course of a patient with a ruptured trachea. He described the exit of air from the wound into the tissues, causing ballooning of the body. Solitary blunt trauma to the trachea is uncommon and the present report stresses some of the specific anaesthetic and surgical aspects of management.

CASE REPORT

A 5-year-old boy had fallen on the handlebar of his bicycle. Later, his parents noticed increasing swelling of the front of his neck and brought him to the emergency room. When he was examined, about 1 h after the injury, there was no dyspnoea or cyanosis. Ecchymosis 1 cm diameter, about 3 cm superior to the suprasternal notch was noted, although the skin was intact. There was subcutaneous crepitation in the neck. During examination the swelling of the neck increased and, after a bout of coughing, ballooning of the anterior and posterior chest walls developed, in continuity with the neck. A chest x-ray revealed subcutaneous emphysema in the anterior and posterior neck, descending to the axilla and chest (fig. 1), and the presence of a pneumomediastinum. The boy became restless and dyspnoeic and it was decided to explore his neck. No premedication was given.

Anaesthesia was induced and maintained with nitrous oxide, oxygen and halothane, administered through a mask. Breathing was spontaneous and endotracheal intubation was not performed at this stage. Upon incision of the deep fascia of the neck the hissing sound of deflation was heard and the swelling diminished markedly.

A trap-door valve tear of the first ring of the trachea, about 1.5 cm in diameter, was found, with the cricoid ring and cervical oesophagus intact. A 6 mm Magill endotracheal tube was introduced. The patient continued to breathe spontaneously. The tear was sutured using no. 4/0 braided stainless steel wire. The wire passed between cartilage and mucosa, in order not to impinge on the tracheal lumen.

Following the operation, the patient was transferred to a humid oxygen tent, and the tracheal tube was removed 24 h after operation. The signs of subcutaneous emphysema disappeared and he was discharged 5 days after admission to hospital. There

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has been a 2-year follow-up. The boy is in excellent health, his speech is normal, and his vocal cord movements are unimpaired. X-ray of the cervical trachea shows freedom from stenosis.

DISCUSSION
Blunt injury to the cervical trachea has been reported after automobile accidents, attempts at strangulation, fist fights and occupational accidents. Alonso, Caruso and Roncace (1973) reported four cases of laryngotracheal blunt trauma in minibike drivers who collided with tense wires with the neck extended.

Blunt tracheal trauma is caused by sudden deceleration, the larynx and trachea being forced against the rigid vertebral column. As a result of a shearing force there is contusion, laceration, avulsion or comminution of the trachea. The soft tissue covering of the trachea may remain intact. Subcutaneous emphysema, dyspnoea and cyanosis develop rapidly. Subcutaneous emphysema may extend to cause pneumomediastinum and pneumothorax. Surgical intervention is mandatory whenever upper airway obstruction threatens normal respiration. Some of the problems of endotracheal intubation are emphasized in the case reports by Thomas (1972) and Sirker and Clark (1973). Endotracheal intubation may be difficult because of the localized swelling, and the use of muscle relaxants may be fraught with danger. IPPV may cause the development of a tension pneumothorax. An endotracheal tube, passed before the lesion has been seen, may penetrate the tear and create a false passage. Also, it may impede the exploration of the posterior wall of the trachea. Therefore, we feel that surgical anaesthesia should be induced using a facepiece and spontaneous respiration whenever possible. Only after assessment of the injury and while the lesion is under direct observation should the introduction of an endotrachael tube be undertaken. Where a mask technique is not feasible, the airway should be secured with the aid of a bronchoscope (Thomas, 1972).

REFERENCES

TRAUMATISME CONTONDANT A LA TRACHEE
RESUME
Un enfant de 5 ans a été victime d’un traumatisme contondant à la trachée cervicale. Un emphysème sous-cutané diffus du cou et du thorax s’est développé rapidement. L’anesthésie par l’halothane a été déclenchée par l’intermédiaire d’un masque facial et le patient a respiré spontanément jusqu’à ce que la lésion ait été explorée. C’est la procédure à suivre qui est recommandée pour le traitement des blessures de ce genre.

STUMPFEN VERLETZUNG DER TRACHEA
ZUSAMMENFASSUNG
Ein 5jähriges Kind erlitt eine stumpfe Verletzung der zervikalen Trachea. Es entwickelten sich schnell diffuse subcutane Emphyseme an Hals und Brustkorb. Über eine Gesichtsmaske wurde eine Halothannarkose eingeleitet, und der Patient atmete spontan, bis die Läsion beurteilt wurde. Dieses Verfahren wird bei der Behandlung solcher Verletzungen empfohlen.

TRAUMATISMO CONTUSO A LA TRAQUEA
SUMARIO
Un niño de 5 años sufrió traumatismo por contusión a la tráquea cervical, desarrollándose rápidamente un enfisema subcutáneo difuso del cuello y tórax. Se indujo la anestesia con halotano mediante una mascarilla y el paciente respiró espontáneamente hasta que se había evaluado la lesión. Se recomienda proceder de esta forma en el tratamiento de este tipo de lesiones.