PNEUMO-MEDIASTINUM IN LABOUR

Lieutenant-Colonel B. GAVOURIN, M.B., F.R.C.S.(Glas.), M.R.C.O.G., R.A.M.C.*

Doctor J. WOODWARD, M.B., D.R.C.O.G., D.C.H.†

British Hospital for Mothers and Babies, Woolwich

Surgical emphysema in or following labour is an unusual complication. Gordon (1927) reviewed the literature back to 1617 and was able to find 128 cases, to which he added two cases of his own. Gordon states that the condition was first described by Simmons in 1783, but Louise Bourgeois, midwife to the Queen of France, possibly referred to it earlier, when she wrote in 1617 "I saw she tried to stop crying out and I implored her not to stop for fear her throat would swell ".

Since Gordon's report, there have been publications of the condition from time to time, Stanley (1943), Hamman (1945), Macrae (1949), Wiland and Crowder (1951), Bell (1952), Eisinger and Berk (1959), Barnes (1962) and more recently Knox (1963).

Case history

The patient was a primigravida aged 19 years, with no significant medical or family history. Her antenatal period, including chest radiography, had been normal except for slight oedema of the extremities near term. Onset of labour commenced two days past her estimated date of confinement. The first stage was prolonged (28 hours) but otherwise uneventful. The second stage (1½ hours) was progressive throughout but during the last few minutes of this stage she complained of right-sided chest pain and numbness over the right side of her neck and face. Delivery, however, was imminent and a routine intramuscular injection of "Syntometrine" 1 ml was given with the birth of the anterior shoulder. A normal live male infant was delivered spontaneously and the third stage was complete in a further 10 minutes with minimal blood loss. At this point the patient was noted to have a moderate degree of swelling around the neck and face, more marked on the right side than on the left. Obvious crepitations were felt over these areas and over the sternum and right side of the chest. The numbness of which she had originally complained persisted, as did the pain. She was not cyanosed nor did she appear in any way breathless or anxious. There were at this time no abnormal cardiac respiratory signs. She was encouraged to sit up and was given an intramuscular injection of promethazine hydrochloride, 25 mg. A tentative diagnosis of pneumomediastinum was made. Portable chest radiographs were taken.

The postero-anterior film (Fig. 1) shows extensive surgical emphysema extending from the superior mediastinum into the root of the neck, over the shoulders and up towards the head. No pericardial air is demonstrated.

The lateral film (Fig. 2) shows displacement of the heart and the ascending aorta backwards by the air occupying the antero-inferior mediastinal space. The air is seen to continue upwards into the superior mediastinum.

The patient was treated with tetracycline and bed rest. By the third day, the visible emphysema had begun to resolve, but at this stage crunching noises in time with systole and diastole became audible over the heart. Repeat chest radiographs were taken.

*Now: British Military Hospital, Iserlohn.
†Now: 2a, Granville Road, Sidcup, Kent.
Fig. 1. Postero-anterior.

Fig. 2. Lateral.
Fig. 3. Postero-anterior (repeat).

Fig. 4. Lateral (repeat).
The postero-anterior film (Fig. 3) shows less air in the superior mediastinum and the soft tissues of the neck with a pocket of air surrounding the heart and outlining the pericardial sac.

The lateral film (Fig. 4) shows only a thin film of air separating the front of the heart from the sternum, the heart and aorta having now returned to their normal positions.

The patient was discharged fit four days later and was seen again two weeks later at which time there were no detectable clinical signs. She failed to attend a follow-up appointment and it has not been possible to repeat the radiography of the chest or to arrange a barium swallow.

Commentary

The mechanism of this disorder in labour is not clear. It has been known to occur in other conditions such as trauma or surgery of the chest, perforation of the oesophagus, resuscitation of the newborn, heavy lifting, straining at stool, and in conditions where there is partial or complete occlusion of the trachea or bronchi usually accompanied by a cough. It is believed that straining against the closed glottis during voluntary expulsive efforts, causes a rupturing of the lung alveoli. Air can thus escape into the interstitial tissues and track along the sheaths of the pulmonary vessels to the hilum at the root of the lung, and into the mediastinum. The air is then able to track further, either up to the tissues under the skin of the face, neck and upper chest, or downwards through the diaphragm in the tissues around the oesophagus and great vessels. It is also possible for the air to be forced through the mediastinal pleura into the pleural cavity, and the association of the pneumothorax and mediastinum in labour usually occurs in healthy primigravidae when during or after the second stage the patient complains of pain in the chest and neck, but rarely shortness of breath. The face swells and the emphysema is found mainly in the neck and over the upper part of the chest; the heart sounds are faint but the lungs from the back sound normal. Occasionally, “crunching” in time with the heart sounds is heard at the onset, but usually this phenomenon is apparent at a later stage when the air begins to be absorbed. In nearly all cases subsequent progress is uneventful, cardiac and respiratory embarrassment occurring rarely when air is trapped around the trachea or in the mediastinum and cannot readily track up into the superficial tissues of the neck. Chest radiographs show air around the heart shadow and tracks of air in the superficial tissues of the neck. In the lateral view air is seen behind the sternum.

Treatment is usually conservative and consists of rest in bed for a few days, antibiotics being given to prevent mediastinitis. It is rare to have to resort to surgical measures to release trapped air. Bell (1952) described a case who had a second child eighteen months after the first with no repetition of mediastinal emphysema.

Acknowledgement

We wish to thank Mr. C. K. Vartan for permission to publish this case, and we gratefully acknowledge the assistance and advice afforded us by Dr. R. H. R. Hartley, Dr. B. Green and Dr. T. Bolan of the Brook General Hospital. In addition we are indebted to Mr. R. A. Long, A.R.P.S., for the photography of the radiographs.
REFERENCES


ACADEMIC ACHIEVEMENTS


F.R.C.S.(Eng.)  MAJOR F. B. MAYES, M.B., B.S., RAMC.


D.O.  CAPTAIN O. S. FRANK, M.B., B.S., RAMC.

D.A.  MAJOR J. C. M. FITZ-SIMON, M.B., B.CH., B.A.O., RAMC.


D. AV. MED.  CAPTAIN I. C. PERRY, M.B., B.S., M.R.C.S., L.R.C.P., RAMC.