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Author(s)	NAGASE, MASAO; OOKAHARA, MINORU; OGATA, NOBUO; YAMANAKA, KOJI
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Traumatic Right Diaphragmatic Hernia with Rupture of the Colon in the Right Thorax

by

MASAO NAGASE, MINORU OOKAHARA, NOBUO OGATA and KOJI YAMANAKA

Department of Surgery, Yamato-Takada City Hospital, Nara

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Traumatic hernia of the diaphragm is an entity of growing importance in consequence of increasing industrial and traffic accidents in our country. Right-sided hernia, however, is very rare as demonstrated by many authors. ITO and TAKABAYASHI[1] reported on 1957 a case of right-sided hernia and stated that their case was the first case of right-sided hernia among 49 cases of traumatic diaphragmatic hernia reported in Japan. NISHIO and SUZUKI[2] reported the second case of traumatic right diaphragmatic hernia. The prolapsed organs were the liver in the first case and the liver, omentum, transverse colon, stomach and duodenum in the second case.

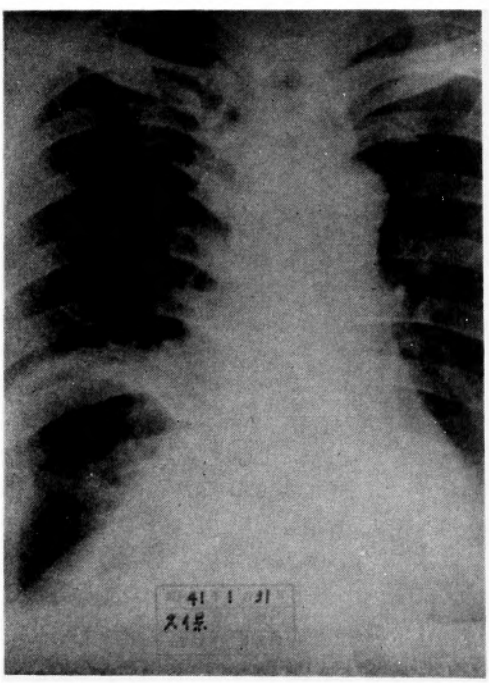

Fig. 1

The rarity of right traumatic diaphragmatic hernia is explained by the fact that the liver shields the dome of the right diaphragm. In fact in all cases of the traumatic right diaphragmatic hernia reported in Japan and in the United States[1)-7)], the liver was found to be herniated first, with or without the other abdominal organs. Our case is the third case reported in Japan, but the case is very interesting in that only the transverse colon prolapsed into the right thorax and ruptured there.

Case: A 46-year old male was admitted to our hospital on Feb. 1 of this year complaining dyspnea. He had sustained fracture of the right 9th rib by a traffic accident and had been treated by adhesive bandage 8 years ago. Thereafter, he began to have pain in the right lower chest and upper abdominal distress which he attributed to "gas". He

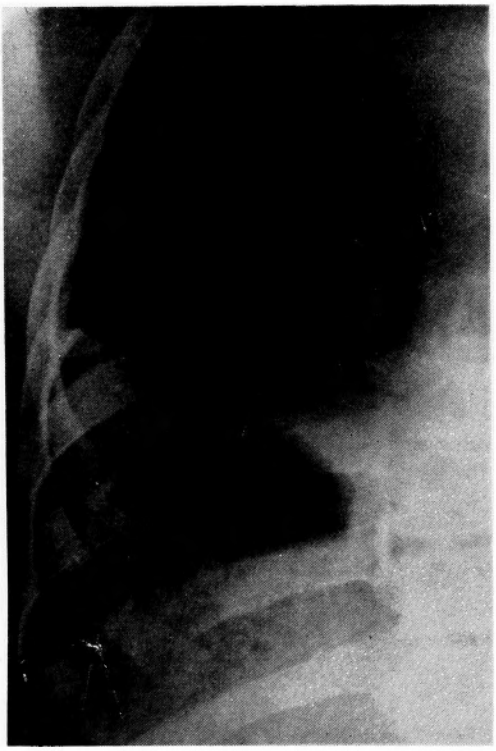

Fig. 2

staded that he would hear "gurgling" in his right lower chest, and he had at sometimes constipation or diarrhea. All these attacks and episodes were intermittent, there being long intervals, sometimes for several months, of complete freedom from symptoms.

Chest roentgenogram (Fig. 1) showed a collection of gas just under the diaphragmatic shadow which was assumed to be the colon. Right traumatic diaphragmatic hernia was suspected and roentgenographic examinations of the alimentary tract were planned on the next day. But, on the next morning, when he got up from the bed, he was stricken with severe dyspnea. Chest roentgenogram (Fig. 2) showed complete right pneumothorax and collection of fluid in the right pleural cavity. A large amount of gas and about 250 cc of bloody fluid was obtained by thoracentesis and his dyspnea disappeared. Esherichia coli was found in the fluid by microscopic examination. Rupture of the prolapsed colon in the right chest was diagnosed and emergency operation was performed.

Right thoracotomy was performed throught the 7th intercostal space under intratracheal nitrous oxide oxygen and fluothene anesthesia. The transverse colon covered by the major omentum was in the right chest compressing the lower and middle lobes of the lung. These structures prolapsed into the chest through a 4 cm radial oval opening in the anterior leaf of the dome of the right diaphragm which had been thought to be stabbed by the fracture end of the 9th rib. When the major omentum was removed from the colon, a large amount of feces flowed out from the colon. The prolapsed colon about 7 cm in length was almost gangraenous and ruptured at the tip of the loop. The major omentum was resected, and the transverse colon was pulled into the chest as far as possible and was resected at seemingly healthy point. End to end anastomosis was done in the chest. The hole in the diaphragm was enlarged by cutting the diaphragm about 2 cm long and the anastomosed colon was returned back into the abdominal cavity. The liver was found to be intact so far as seen from the chest, and the transverse colon had prolapsed into the chest over the anterior surface of the liver. The parietal pleura of the right chest showed remarkable thickening which was considered due to recurring pleuritis by Esherichia coli. The visceral pleura of the middle and lower lobes also showed moderate thickening but the lung expanded fully by insufflation. The chest cavity was washed with saline solution thoroughly. The opening in the diaphragm was closed with silk suture after renewing its edge. Two rubber catheters were inserted through the intercostal spaces, one into the apex and the other into the basis of the right chest. The crushing of the phrenic

nerve was not done (Fig. 3-5).

The postoperative course was uneventful. The draining catheters were removed 48 hours after operation. The patient was discharged 3 weeks later. The chest roentgenogram at that time (Fig. 6) showed complete reexpansion of the right lung and almost normal position of the right diaphragm. The patient are now completely free from symptoms which had afflicted him for many years.

The mucosa of the resected colon as shown in Fig. 7 was very atrophic due to longstanding ischaemic condition caused by the strangulation of the mesocolon by the diaphragm.

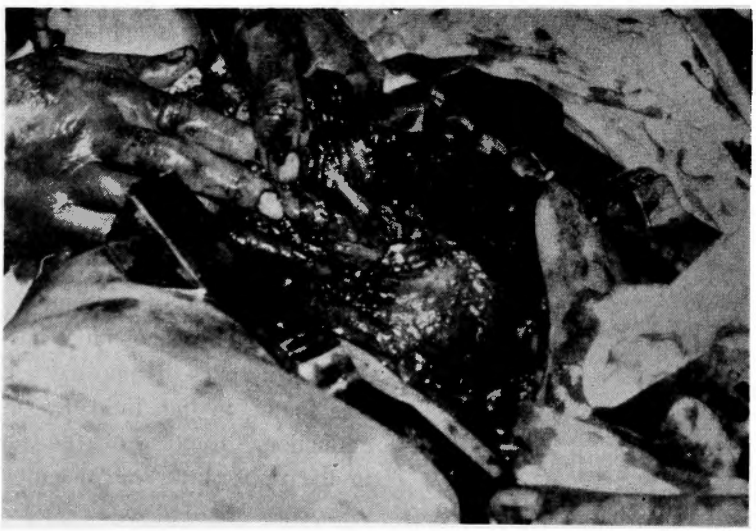

Fig. 3 The prolapsed colon and omentum

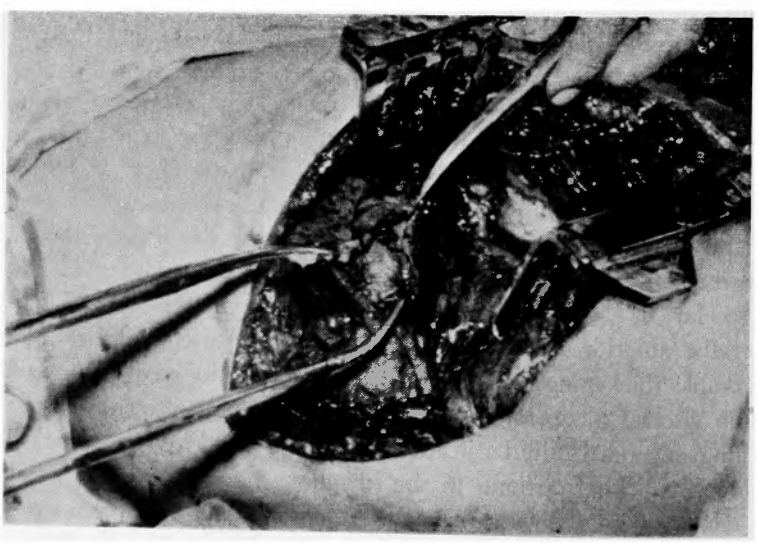

Fig. 4 The ruptured colon

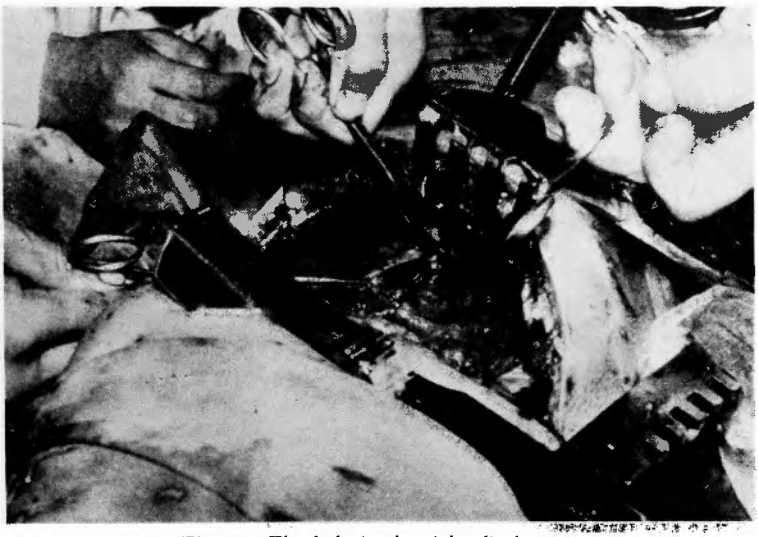

Fig. 5 The hole in the right diaphragm

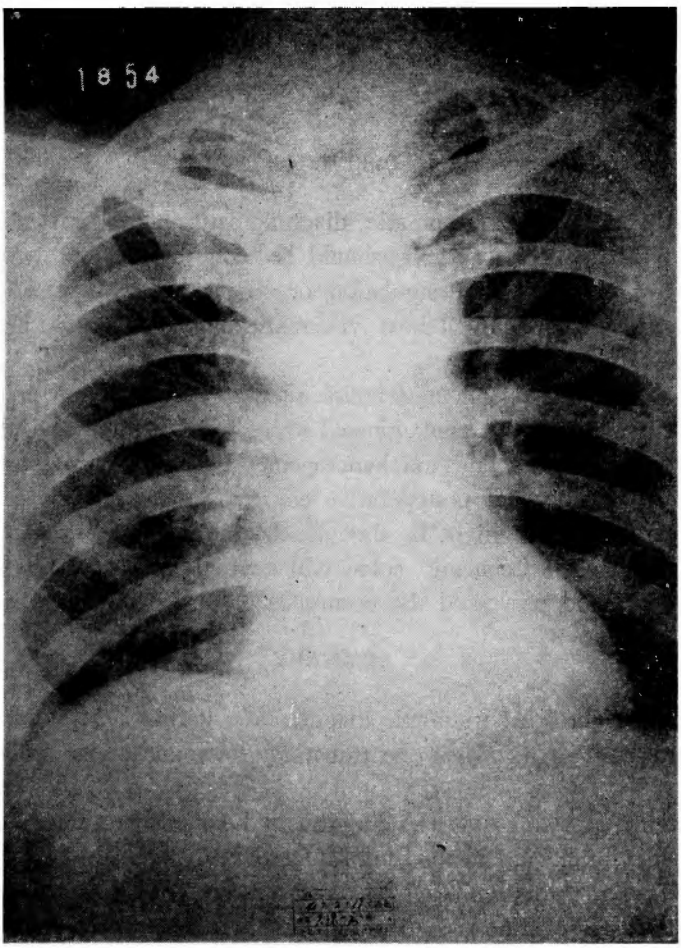

Fig. 6 Note the deformity of the right 9th rib.

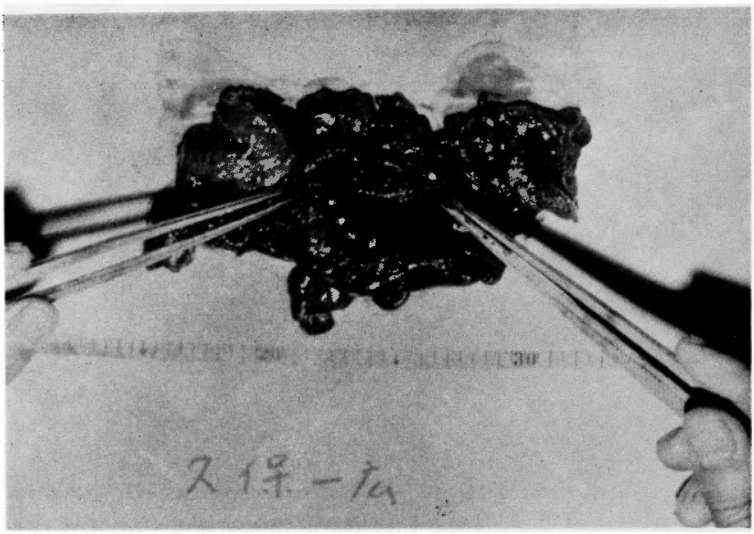

Fig. 7 The resected colon

DISCUSSION

The rational treatment of traumatic diaphragmatic hernia is surgical and once the diagnosis is established, surgical repair should be done as early as possible in order to avoid the danger of perforation, strangulation or obstruction. No case, however, of perforation of the prolapsed abdominal hole visceras could be found in literatures in Japan as well as in the United States.

Our case was operated on about 2 hours after the onset of perforation of the colon and the right pleural cavity was contaminated strongly by feces. The pleural cavity was washed out thoroughly with saline and kanamycin. Fortunately, in spite of apprehension of many doctors of our hospital, postoperative empyema did not occur and the postoperative course was excellent. It might be thought that recurring pleuritis caused by Escherichia coli escaping from the ischaemic colon had strengthened local and general resistance against coli infection, and prevented the occurence of postoperative empyema.

SUMMARY

1) A case of right-sided traumatic diaphramatic hernia is reported.

2) The prolapsed organs were the transverse colon and major omentum. The liver did not prolapse.

3) The prolapsed colon ruptured and caused hemopneumothorax.

4) Resection of the gangraenous and ruptured colon and an end to end anastomosis were performed in the right thorax. The postoperative course was uneventful.

5) Surgical repair of traumatic diaphragmatic hernia should be considered as a matter of urgency.

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和文抄録

右胸腔内において横行結腸の穿孔をきたした外傷性横隔膜ヘルニアの一手術治験例

大和高田市民病院外科

長瀬正夫・大河原実・緒方信雄・山中功二

46才の男子．8年前の右第9肋骨骨折に基因すると思われる横隔膜ヘルニアの疑いで入院したが，その翌日，突然右完全気胸を発した．直ちに開胸手術を行つたところ，横隔膜前縁近くの直径的4cmの円形の裂隙から横行結腸約7cm長が脱出し，横行結腸は壊疽性で，その先端部が穿孔していた．胸腔内で壊死腸管を切除し，端々吻合を行つたのち，腹腔内に還納した．肝には異常をみとめなかつた．術後経過は良好で，3週間目に全治退院した．

右外傷性横隔膜ヘルニアの報告は極めて稀であるが，報告例ではすべて，まず肝が脱出し，続いて他の腹腔内諸臓器が脱出している．本例の如く，肝には異常なく，他臓器のみが脱出していたという報告はみられない．