

둔상에 의한 외상형 누두흉 -1례 보고-

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=Abstract=

Traumatic Funnel Chest due to Blunt Trauma -A Case Report-

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This 51 years old male patient was admitted to the department of thoracic and cardiovascular surgery via OPD because of anterior chest pain. 7days ago before admission, He got the chest trauma after traffic accidents,the lateral chest roentgenogram showed complete transverse sternal fracture. He also complained of mild dyspnea. We also noticed that he had depressed anterior chest wall. It looks like funnel chest. The operative findings revealed dislocated & callus formations at the both 4th and 5th costochondral junction and transverse fracture of sternal body between 4th and 5th costochondral junction, the upper end of sternal fracture was situated below the lower end of sternal fracture. The two ends of sternal fracture were situated at the same level and reapproximated the two ends by two-interrupted wire sutures. The patient is well on the road to recovery after the operation.

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Key words : 1. Flail chest
2. Chest trauma
3. Funnel chest

Case Report

The 51 years old male patient was admitted to the department of Thoracic and Cardiovascular surgery via OPD because of dyspnea and anterior chest discomfort with painful sensation onto the clothes for 7 days. 7 days ago before admission, he was injured by the in-car accident. The other car crossed the midline of the road & hitting on the front of his car at that time, he was driving the car with fastened seat belt, he was injured from direct impacts with steering column on his anterior chest. So,he had dep-

ressed anteromedial chest after the blunt trauma. The depressed anteromedial chest looks like funnel chest. It also revealed moderate flail in the anterior chest. The lateral chest films showed transverse sternal fracture(Fig. 1). The echocardiogram demonstrated normal global and regional function of the heart. The enzyme studies including Lactic dehydrogenase(LDH), Glutamic oxaloacetic transaminase(GOT) and Creatine phosphokinase(CPK-MB) showed within normal limits. So, We decided to correct the depressed anterior chest by operative method. The operative

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Fig. 1. The lateral chest film showed transverse sternal fracture.

findings revealed callus formations at the both 4th and 5th costochondral junction and transverse fracture of sternal body between both 4th and 5th costochondral junction (Fig. 2). The upper end of sternal fracture was situated below the lower end of sternal fracture. The upper end of the sternal fracture elevated by periosteal elevator, and two interrupted wire sutured were applied on transverse sternal fracture and reapproximated the two ends of sternal fractures (Fig. 3). The patient is well on the road to recovery after the operation.

Discussion

Sternal fractures most commonly occur in automobile accidents and from direct impact to the anterior chest¹⁻³⁾. However, severe flexion injuries of the vertebrae may also produce sternal fracture. With a seat belt use without shoulder restraint, there is frequently both a sternal and a vertebral injury as the body bends forward on deceleration

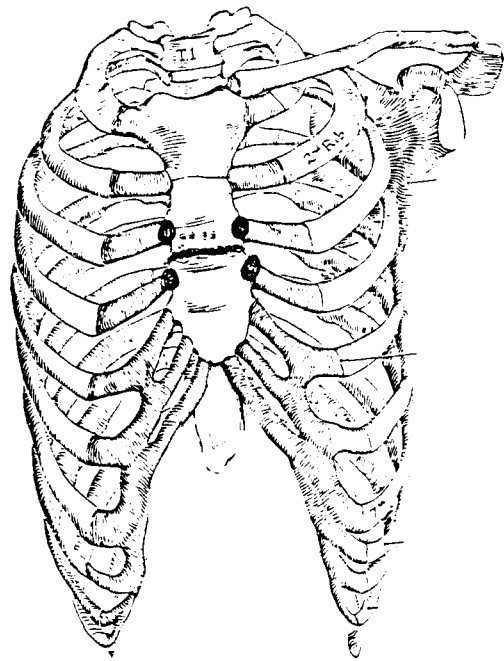


Fig. 2. Schematic view of operative findings as follows; dislocation and callus formation of both 4th and 5th costochondral junction and transverse fracture of sternal body between both 4th and 5th costochondral junction fracture.

both traumatic rupture of the aorta and rupture of liver are common in this type of deceleration^{2, 4)}.

Sternal injuries are commonly associated with costochondral dislocations of multiple ribs and therefore, with flail chest. If someone got sternal injuries, he or she should always suspect rupture of a bronchus, rupture of major arteries and myocardial injury, because the heart is compressed between the sternum and the vertebrae. The most common sites of sternal fracture are transversely at the junction of the manubrium and body, and transversely through the body.

The diagnosis of the sternal fracture is made easily by physical examination. The sternum is below the subcutaneous layer, so, it is easily palpated and the fractured fragments be felt by fingers. Flail chest is an unstable chest wall. Anterior flail chest usually results from direct impact such as with the steering column, severe compression such as being run over by a vehicle.

Treatment of sternal fracture consists of primary atten-

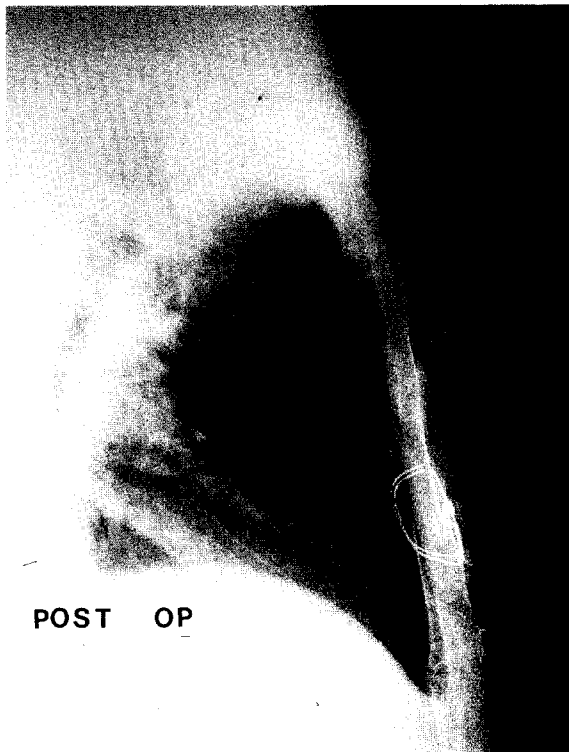


Fig. 3. The lateral chest film showed reapproximated sternum by two wires.

tion to associated injuries.

Analgesics and even local injections of anesthetics are needed, sternal fractures are best managed by early fixation of the sternum by direct wiring. The use of substernal pins & towel clips fixation methods are not used at this time because of time consuming, highly got infected chance and patients can't be ambulated for a long time. If the patients are managed by early fixation of sternum, there is no need to endotracheal intubations and ventilator^{2, 5, 6).}

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=국문초록=

51세 남자가 자가운전중 중앙선을 넘어오는 트럭과 정면 충돌 후 개인병원을 거쳐 전 흉부 흉통(Anterior chest pain)을 주소로 입원하였다. 흉부외측사진상 흉골이 완전 횡골절(Complete transverse sternal fracture)된 소견을 보여주었다. 중등도의 전흉벽동요(Anterior flail chest)가 있어 수술을 시행하였다. 수술 소견상 양측 4, 5늑연골접합부위 탈구(Dislocation of costochondral junction)가 있었고 이부위에 가골형성(Callus formation)이 있었다. 좌우 양측 4, 5늑연골접합부위 탈구 사이의 흉골체(Sternal body)가 완전 횡골절되어서 함몰되어 있어 누두흉(Funnel chest)양상을 보여 주었다. 수술은 4, 5(양측) 늑연골접합부위의 탈구로 인해 형성된 가골을 제거하고 횡골절된 흉골체를 Wire로 단단 봉합하였고 환자는 별 문제 없이 퇴원하였다.