

EMERGENCY AND ELECTIVE FULL ENDOSCOPIC SURGERIES FOR PENETRATING **HEART SHRAPNEL** INJURIES

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BACKGROUND

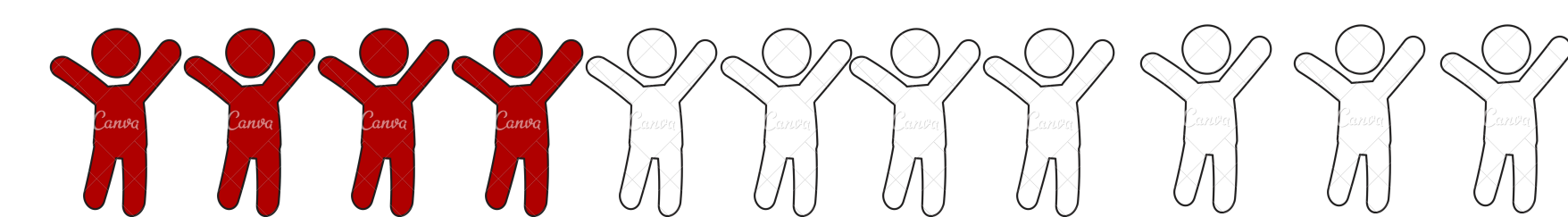
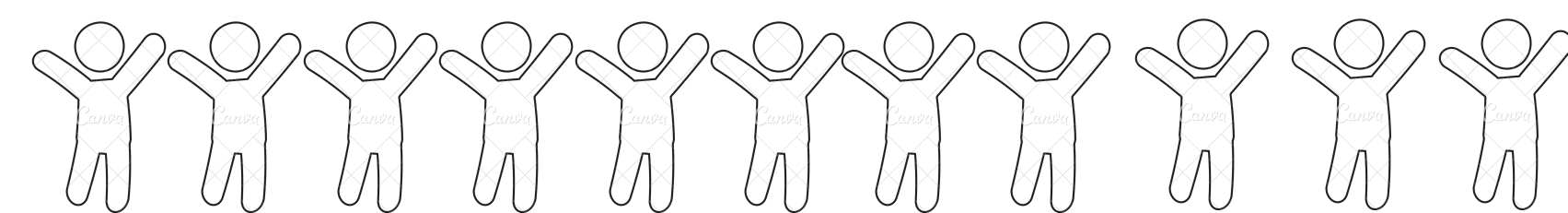
In the structure of all life-threatening combat trauma, injuries of the heart and great vessels make up **8-36%**. Moreover, the leading cause of high mortality among military shrapnel damage remains **haemorrhage** due to penetrating heart and great vessel trauma.

Therefore, diagnostic modalities with a systematic approach are essential to improving the diagnosis process and management. Experienced teams of surgeons and anesthesiologists can use minimally invasive (thoracoscopic) interventions to effectively treat patients even in critical conditions (massive hemopericardium, cardiac tamponade).

METHODOLOGY



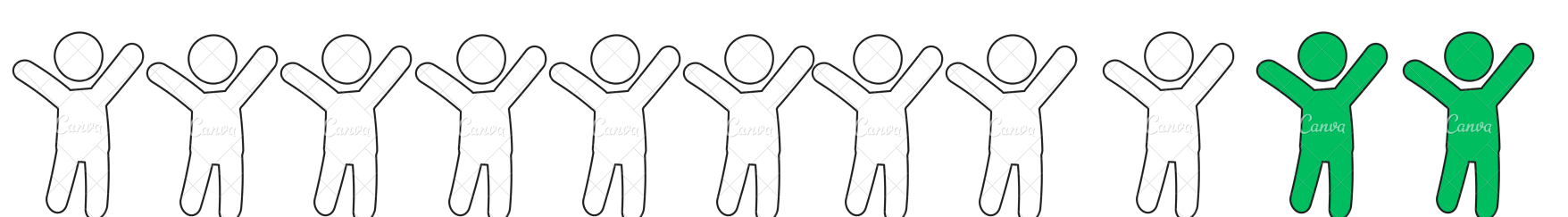
PENETRATING HEART INJURIES | FULLY THORACOSCOPIC INTERVENTIONS



+life-threatening injuries, massive
hemopericardium, and **cardiac**
tamponade, with cardiogenic shock (n=4)



+ penetrating heart injuries, with
hemopericardium without cardiac
tamponade (n=5)



+ penetrating heart injuries with
impaired function of the AV valves with
significant insufficiency (n=2)

Full thoracoscopic interventions = the
final stage of surgical treatment (n=11)

Operations were performed:

- single-lung intubation
- video bronchoscopy
- removal of metal shrapnel fragments and stopping bleeding

OFF-PUMP

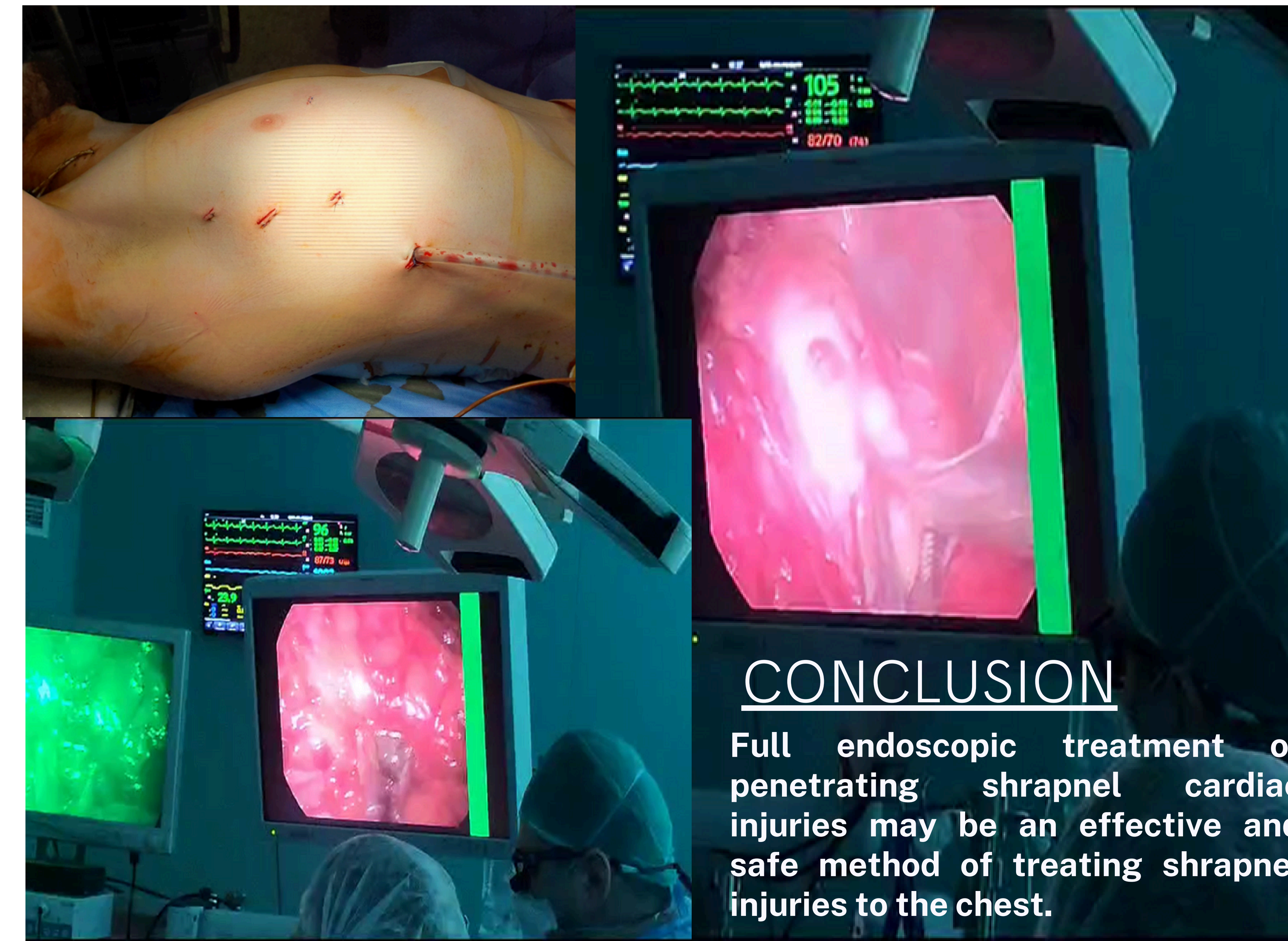
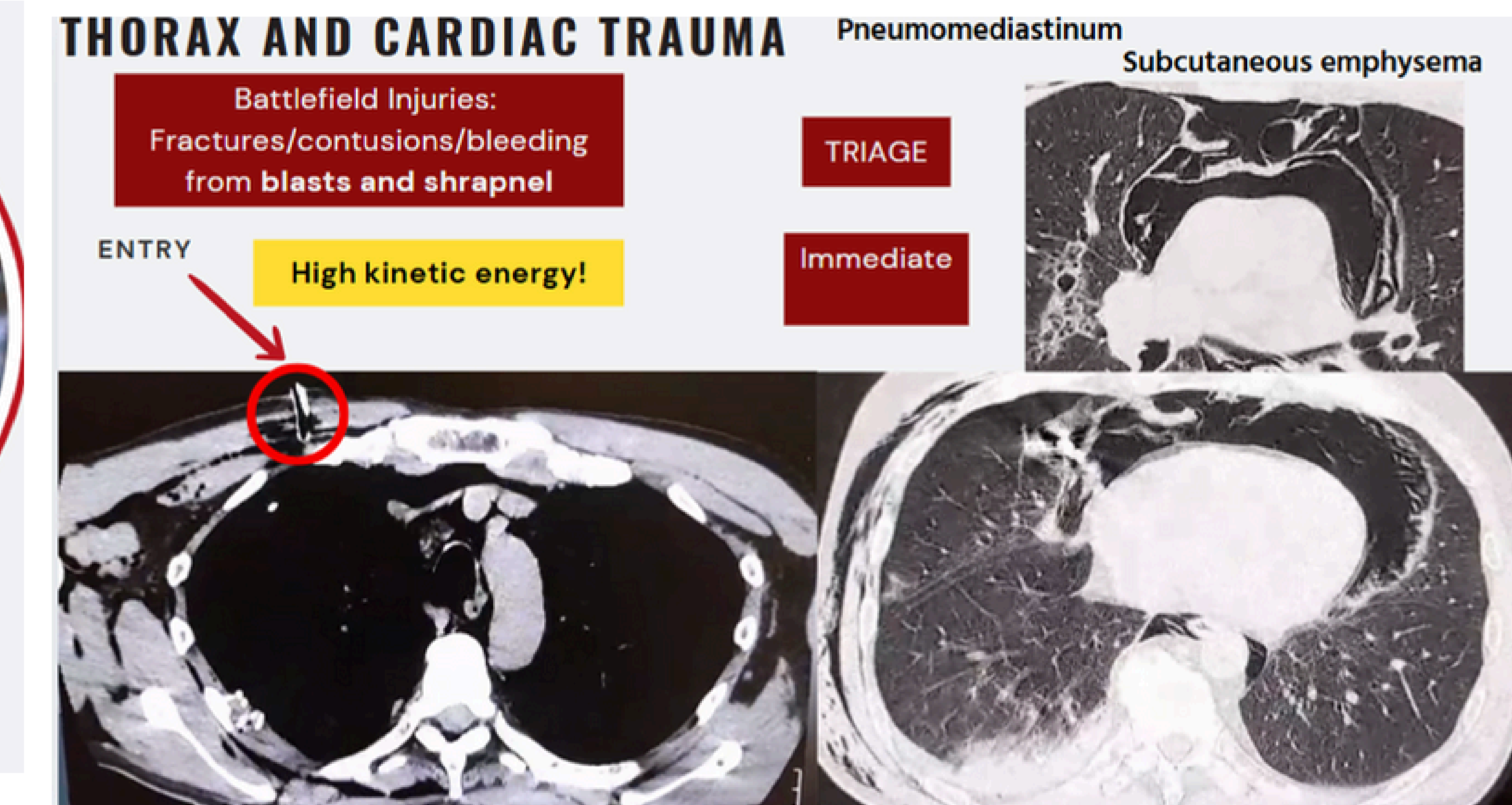
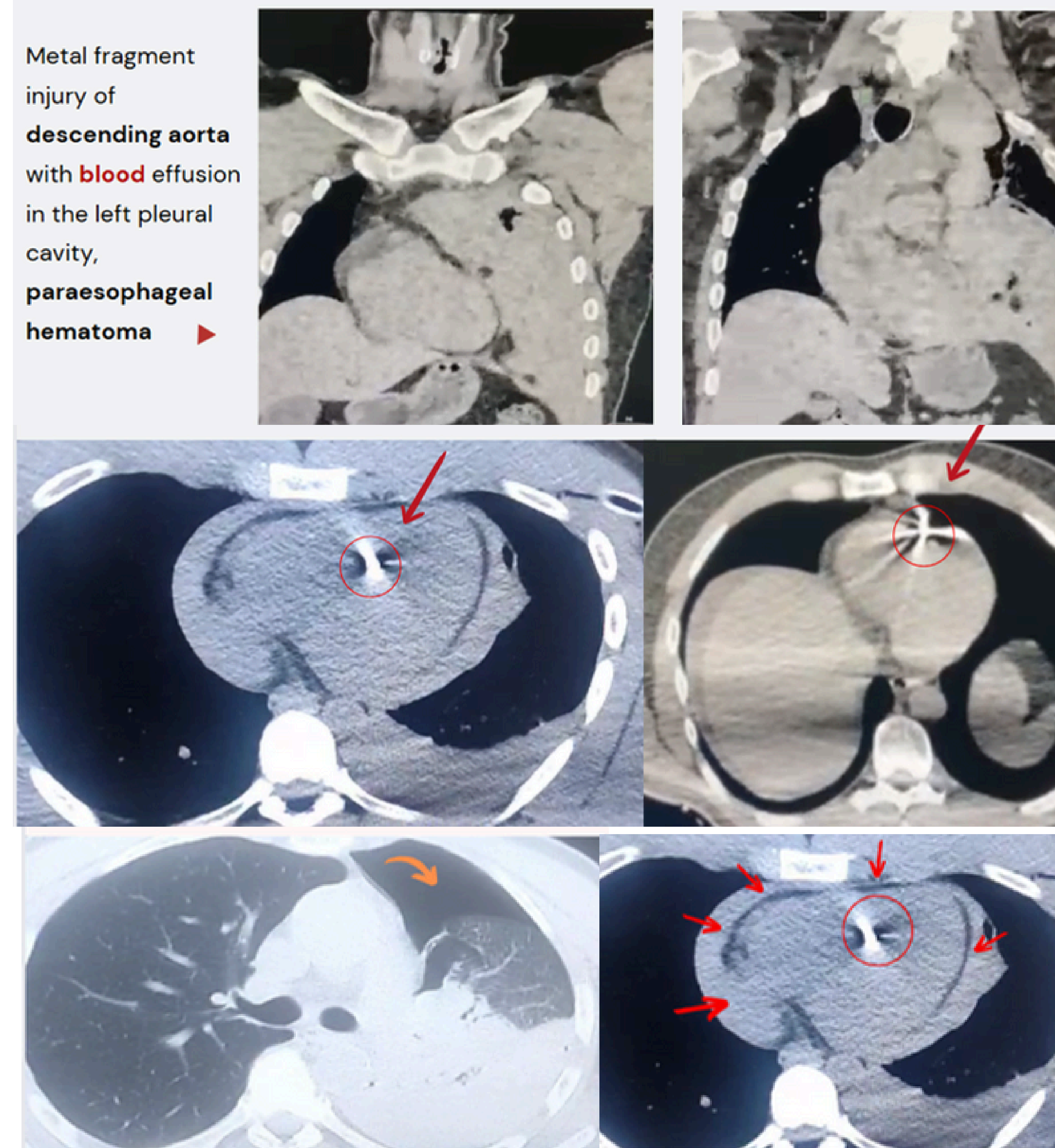
CPB

RESULTS

No mortality was observed in this category of patients who were qualified for minimally invasive thoracoscopic interventions. In all patients, minimally invasive heart surgery procedures were the final method of treatment for heart injury. The valves were restored to good function in two patients who underwent thoracoscopic valve plasty. In one patient, pleural empyema developed in the late postoperative period, requiring additional pleural cavity sanitation. All patients were followed for at least 12 months in the postoperative period.



Metal fragment
injury of
descending aorta
with **blood** effusion
in the left pleural
cavity,
paraesophageal
hematoma



CONCLUSION

Full endoscopic treatment of
penetrating shrapnel cardiac
injuries may be an effective and
safe method of treating shrapnel
injuries to the chest.