Editorial

The importance of individualized surgical treatment of descending necrotizing mediastinitis

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We have read with interest the study "*Management of descending necrotizing mediastinitis with severe thoracic empyema using minimally invasive video-assisted thoracoscopic surgery: a case report*", in which Zhang *et al.* presented a case of descending necrotizing mediastinitis (DNM) complicated with severe thoracic empyema in a young girl. This girl was very well treated using minimally invasive video-assisted thoracoscopic surgery (VATS) (1). We believe that this report is very intriguing and we consider VATS a relevant option in the therapeutic arsenal of the surgeons.

DNM is a rare and severe complication that arises from pharyngeal or odontogenic infection and may spread into the mediastinum. When its origin is a dental infection of the second or third lower molar, it is called Ludwig's angina (2). Its treatment usually needs a broad-spectrum antibiotic and a surgical drainage of the mediastinum, mostly in more than one procedure (3).

Mediastinitis associated with Ludwig's angina is rare. In 2018, we reported a case of a young male with a submandibular infection that extended to the anterior, retropharyngeal, and mediastinal cervical spaces. He was treated with a surgical drainage of these locations through a cervicotomy and sternotomy (4). After sequent approaches to surgical revision of the mediastinum and clinical stabilization, there was a dehiscence of the sternal wound. In order to reconstruct the defect, we used the unilateral pectoralis major muscle flap which completely covered the sternotomy dehiscence. The patient presented a good evolution outcome, without complications.

In our report, we aimed to highlight the reconstruction option applying the unilateral pectoralis major muscle flap, as a good technique for the treatment of dehiscence of sternotomy (4). It is an additional choice for the treatment of mediastinitis and osteomyelitis of the sternum due to Ludwig's angina, allowing for stable sternum coverage.

DNM has been associated with huge mortality rates (in some situations higher than 50% of the patients, notwithstanding proper treatment) (5). Thence, the early start of antibiotics, suitable surgical drainage, and intensive clinical care are substantial for adequate treatment, as the study by Zhang *et al.* has highlighted.

Several surgical procedures in the thoracic cavity have been reported and should be individualized. In our case report, we chose the median sternotomy in addition to cervicotomy. In spite of allowing extensive drainage of cervical region and mediastinum, this access has some drawbacks, such as suture dehiscence of the sternum, inadequate access to the posterobasal compartment of the thoracic cavity (especially on the left side), and the high incidence of osteomyelitis (6). Zhang *et al.* successfully used minimally invasive VATS.

The treatment of a sternal wound dehiscence (classified as a complex wound) has been a challenge for the surgeon (7). In massive and infected chest wounds, the transplant of vascularized tissues to the impaired area helps to the

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ventilation dynamics as well as the stabilization of the chest wall, eventually treating the infection and stimulating the healing (8).

Based on our previous experience, we believe that the unilateral pectoralis major muscle flap is a safe option in most cases of deep sternal wound infections and sternotomy dehiscences, even until in more extensive defects that could be treated with other flaps (9). Supposedly, a shorter dissection leads to a reduction in the risk of chronic pain, a lesser surgery time, and a lower risk of functional deficits of the pectoralis muscle.

Therefore, the coverage of sternal defects using the unilateral pectoralis major muscle flap is very useful for the treatment of sternum osteomyelitis and DNM secondary to Ludwig's angina. Also, it can provide an appropriate stability in the rib cage, making unnecessary the sternal osteosynthesis.

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