

Cardiac Tamponade – Late Complication of Minimally Invasive (Nuss) Procedure for Pectus Excavatum

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Introduction: Nuss procedure is an established and preferred minimal-invasive technique for pectus excavatum correction. Complications related to the Nuss procedure are not unusual, but major complications rarely occur. Possible complications include pneumothorax, pleuritis, hemothorax, displacement of bar, pericardial effusion, pericarditis and cardiac injury. Pericarditis and pericardial effusion occur in 0.4 - 4.2% cases. Late cardiac complications have been reported caused by broken or displacement bar, and broken sternal wire, but late complications as cardiac tamponade or large pericardial effusion without clear cause are described very rarely.

Methods and Results: A total of 228 children underwent Nuss procedure in Department of Paediatric Surgery of University Children's Hospital Zagreb since 2001 to 2015 y. All these procedures were done without major cardiac complications except late cardiac complications in three boys (1,3%), 14-16 y old, as cardiac tamponade/ large pericardial effusion without a clear cause, 6 months after Nuss operation. The course of the operations was uncomplicated. Two patients developed pleural effusion, and marginal pneumothorax in the early postoperative period. After recovery from early postoperative complications, the further course was uneventful with normal echocardiography. Dyspnoea and chest pain developed gradually. Echocardiography revealed large pericardial effusion of 2.5 to 5 cm around the whole heart. Two boys had clinical and echocardiographic signs of heart tamponade and pericardiocentesis was necessary. The steel bars were undamaged and their position unchanged. Inflammatory parameters were normal and no microbiological agent was detected. The treatment was continued with nonsteroidal anti-inflammatory drugs. The complete clinical recovery and resolution of the effusion was reached after 8-10 weeks. No recurrence was detected in any of the patients, and there was no indication for the earlier metal bar removal. Two bars were removed two years after the procedure, one is still in place. Etiology and pathogenesis of this process remain controversial, with possible involvement of irritation of the pericardium, autoimmune and (auto)inflammatory pathways.

Conclusions: This cases suggest that surgeons should keep in mind the possibility of cardiac complications without common causes late after surgery.