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Complications associated with the use of stabilizers in Nuss procedure for pectus excavatum

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IRB Number: 1143

Describe role of Submitting/Presenting Trainee in this project (limit 150 words):

Lead research fellow, data collection, data analysis, writing, and editing.

Background, Objectives/Goal, Methods/Design, Results, Conclusions limited to 500 words

Background:

The Nuss procedure for pectus excavatum repair is performed by introducing a metal bar across the chest to immediately correct the deformity. The most common way to fix the bar in place and prevent displacement is with the use of metal stabilizers.

Objectives/Goal:

To evaluate complications associated with the use of stabilizers for repair of pectus excavatum. We hypothesize that patients with bilateral stabilizers will have higher rates of stabilizer complications with no difference in rate of bar rotation when compared to those with unilateral or no stabilizer.

Methods/Design:

Patients aged 13-18 years old who underwent bar placement for pectus excavatum at a single center between January 2002-December 2019 were identified. Patients were excluded if they had open resection, more than one bar, no documented bar removal or follow-up, and those with incomplete operative details. Retrospective review of chart data was performed to identify demographic data, Haller index, operative details, and clinic follow-up notes. Complications identified included pain requiring stabilizer removal, surgical site infections,

and bar rotation. Data are presented as medians with interquartile ranges (IQR) and frequencies with percentages.

Results:

A total of 430 patients were included. The cohort was predominantly male (87.9%, n=378) with a median age at the time of bar placement of 15.4 years (IQR 14.4,16.5) and a median Haller index of 3.8 (IQR 3.4,4.6). The majority had bilateral stabilizers placed during surgery (90.0%, n=387), followed by unilateral stabilizer (9.5%, n=41) and no stabilizer (0.5%, n=2). Pain attributed to the stabilizer site that required removal was observed only in the bilateral stabilizer group (2.3%, n=9). Surgical site infection related to the stabilizer site occurred in 1.3% (n=5) of the bilateral stabilizer cases and 2.4% (n=1) of the unilateral stabilizer cases. Bar rotation was observed in 0.3% (n=1) of the bilateral stabilizer cases and the patient also had a stabilizer site infection. There were no complications in the no stabilizer group.

Conclusions:

As the trend moves towards unilateral and no stabilizer use, we observe fewer cases of pain requiring stabilizer removal and no increased number of bar rotations.