

SELECTIVE VERSUS ROUTINE PATCH METAL ALLERGY TESTING TO SELECT BAR MATERIAL FOR THE NUSS PROCEDURE IN 932 PATIENTS OVER 10 YEARS

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Aim of the Study: To determine the role of patch metal allergy testing to select bar material for the Nuss procedure.

Methods: An IRB-approved (11-04-WC-0098), single institution, retrospective, cohort study comparing selective versus routine patch metal allergy testing to select stainless steel or titanium bars for Nuss repair was performed. Patients with a positive patch test received titanium bars. In Cohort A (9/2004-1/2011), selective patch testing was performed on patients considered clinically to be at risk for stainless steel allergy. In Cohort B (2/2011-9/2014), all patients were patch tested. All patients repaired with titanium bars without testing were excluded. The cohorts were compared for incidence of bar allergy and resultant premature bar loss. Risk factors for a positive patch test were identified.

Main Results: Cohort A had 628 patients with 63 (10.0%) selected for patch testing; 26 (41.3%) of the 63 tested positive. In Cohort B, routine patch testing was performed on 304 patients; 64 (21.1%) tested positive. Over 10 years, no titanium bar allergies occurred and 15 (1.8%) of the 842 stainless steel bars placed resulted in an allergy despite 5 having a negative patch test preoperatively. The incidence of stainless steel bar allergies (1.8% vs 1.7%, $p=0.57$) and resultant bar loss (0.5% vs 1.3%, $p=0.23$) was not statistically different between cohorts. (Table) Patients with personal history of metal sensitivity were more likely to have a positive patch test (OR=8.5, $p<0.001$) and the risk was higher when combined with family history of metal sensitivity (OR=13.1, $p<0.001$).

Conclusion: Stainless steel bar allergies occur at a low and clinically equivalent incidence following either routine or selective patch metal allergy testing. Patch testing is advisable for patients with a personal or family history of metal sensitivity.

Cohort	A	B	Totals
Pectus Repairs	628	304	932
Titanium Bar Repairs	26	64	90
Stainless Steel Bar (SSB) Repairs	602	240	842
SSB Allergies	11 (1.8%)	4 (1.7%)	15 (1.8%)
SSB Premature Loss	3 (0.5%)	3 (1.3%)	6 (0.7%)