

Approach to the pediatric Poland syndrome patient: A 20-year academic experience and update of the literature

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Abstract

- **Background:** Poland syndrome is a spectrum of deformities involving the chest and breast tissues. There is a lack of studies on long-term outcomes and patient-reported results for pediatric patients.
- **Methods:** A retrospective chart review of 47 pediatric patients who underwent surgery for Poland syndrome (2003-24). Patients were classified using Foucras and TBN systems. Surgical trends analyzed.
- **Results:** 12 males and 35 females were included. Initial surgeries were fat grafting (45%) and latissimus dorsi reconstruction (55%). Higher Foucras classifications correlated with more procedures (**p=0.029**). Seven surgical complications occurred. Appearance concerns were the main psychosocial stressor (87%).
- **Conclusions:** Pediatric Poland syndrome treatment requires a multidisciplinary approach, addressing both physical and psychological development. Patient education and psychological support are key for improved outcomes.

Objectives

1. Conduct a thorough review of the literature to elucidate recent trends in pediatric Poland syndrome management.
2. Highlight Children’s Hospital of Philadelphia evolution of surgical interventions and trends over the past 20 years.
3. Explore which, if any, behavior health components are most salient in this unique population.

Methods

- Patients were included if they had a clinical diagnosis of Poland syndrome and were younger than 18 years old at the time of initial consult and time of initial surgery.
- A cross-sectional analysis tested associations between type of surgical procedure at initial surgery, severity of Poland syndrome at initial visit, and complication risk.

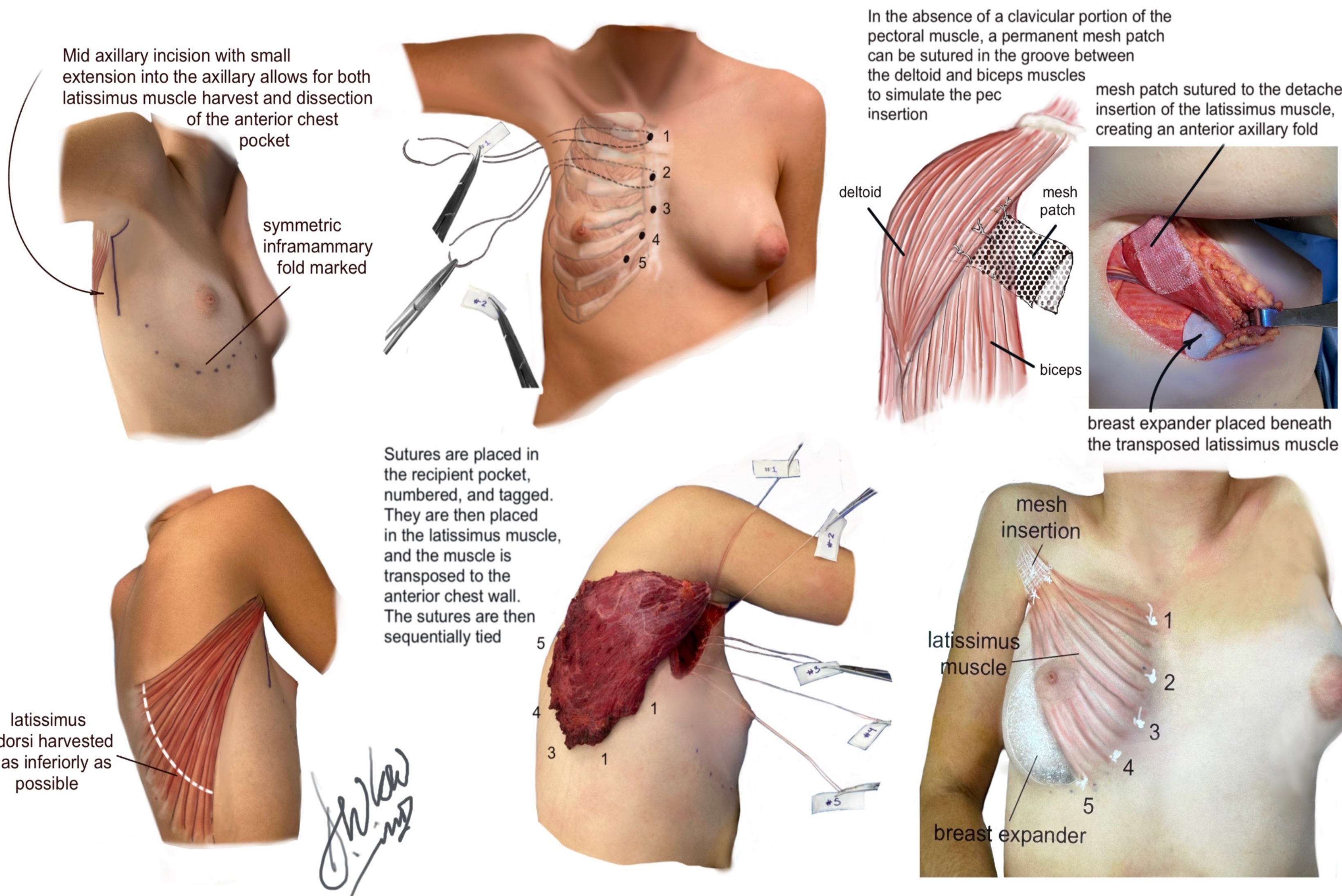
Results

- There were statistically significant differences in number of surgeries between the Foucras classification levels (**p = 0.02905**). A positive Spearman correlation was found between the classification value and number of surgeries (**rho = 0.3878, p = 0.006464**); There were no differences when using the TBN system* (**p = 0.234**).
- There were two minor complications (complications within 30 days of procedure), one seroma and one wound dehiscence. There were five major complications (any complication that required a reoperation): one infection treated with debridement, two implant exchanges due to rupture, and two implant exchanges due to migration.
- The most common behavioral health themes among patients were issues with appearance (13 notes, 87%) followed by wearing new clothing that could accommodate their body (7 notes, 47%), and pain (3 notes, 20%).

Table 1: Patient Demographics

	Value (%)
Age at Initial Surgery - Mean	14.6
Age at Initial Surgery - Range	6.3 - 18
Male	12 (25)
Female	35 (75)
Foucras Classification - 1	24 (51)
Foucras Classification - 2	20 (43)
Foucras Classification - 3	3 (6)
TBN Classification (T) - T1	25 (53)
TBN Classification (T) – T2	20 (43)
TBN Classification (T) – T3	2 (4)
Side of Malformation - R	31
Side of Malformation - L	16
Number of Surgeries - Mean	1.83
Number of Surgeries - Range	1 - 6
Latissimus Flap	26 (55)
Fat Grafting	21 (45)
Surgery Complication Rate	7 (15)
Minor Complication	2 (4)
Major Complication	5 (11)

Figure 1: Approach to latissimus muscle reconstruction. Mid axillary incision w/ extension and the general principle of approach (left column), parachuted and sequentially tied sutures to the anterior and inferior chest wall (middle column), with creation of anterior axillary fold and final positioning (right column).



Conclusions

1. Plastic surgeons need to frame reconstruction to consider both the short-term pre-pubertal goals and long-term adult goals, while prioritizing a multidisciplinary approach.
2. Fat grafting and specifically serial fat grafting are viable options for improving long term soft tissue stability and aesthetics of the skin, as seen by low complication rates.
3. Further long-term surgical outcomes and patient reported outcome studies studies are needed, as they under reported and key to successful treatment.

*Note: This score was calculated by adding up the numerical classification of each of the Thorax and Breast variables (e.g., a class T1 B2) patient would have a score of 3. The TBN system does not optimize for a single numerical classification like Foucras does, therefore we used this aggregate score to try and allow for comparison amongst classification schemas.