

An Update on Lessons Learned After Conjoined Twin Separation

A Fifteen-Year Single Institution Review

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INTRODUCTION

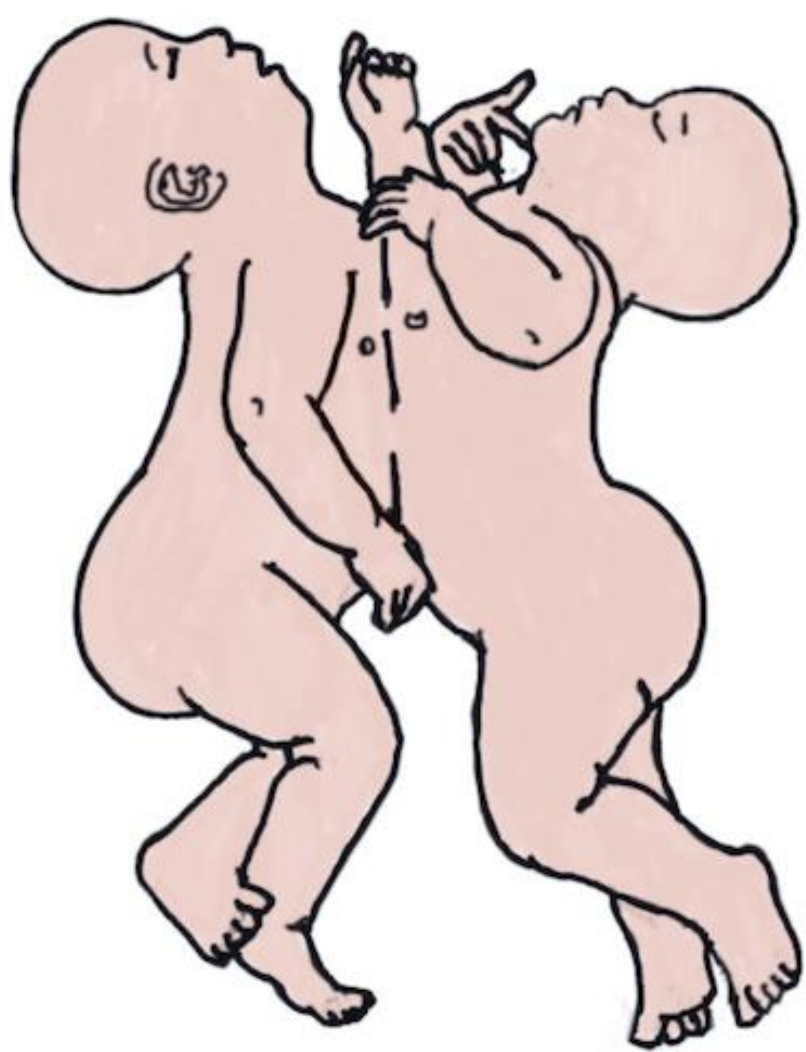
- Conjoined twinning is a rare anomaly occurring in about 1 in 200,000 live births, most commonly involving thoracic or abdominal fusion.
- Separation can create complex, unique soft tissue defects that require coordinated multidisciplinary planning and implementation of plastic surgical principles.
- Tissue expansion (TE), first described for conjoined twin separation in 1986, is now a key strategy at our institution for generating adequate soft tissue coverage.
- Our institution has separated 33 pairs of conjoined twins over 44 years. We review our recent experience to highlight lessons in surgical planning, soft tissue management, and multidisciplinary coordination.

METHODS

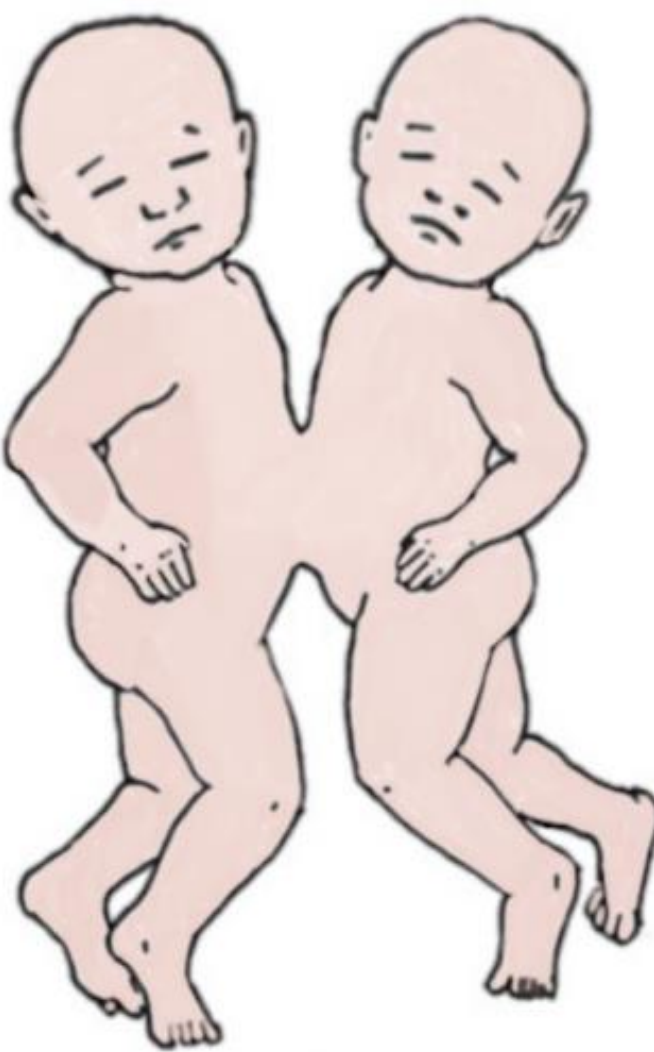
- Retrospective review of elective conjoined twin separations involving plastic surgery at CHOP (2011–2024).
- Data collected included patient characteristics, conjoinment type, tissue expansion use and complications, reconstructive techniques, and postoperative outcomes.

CONCLUSION

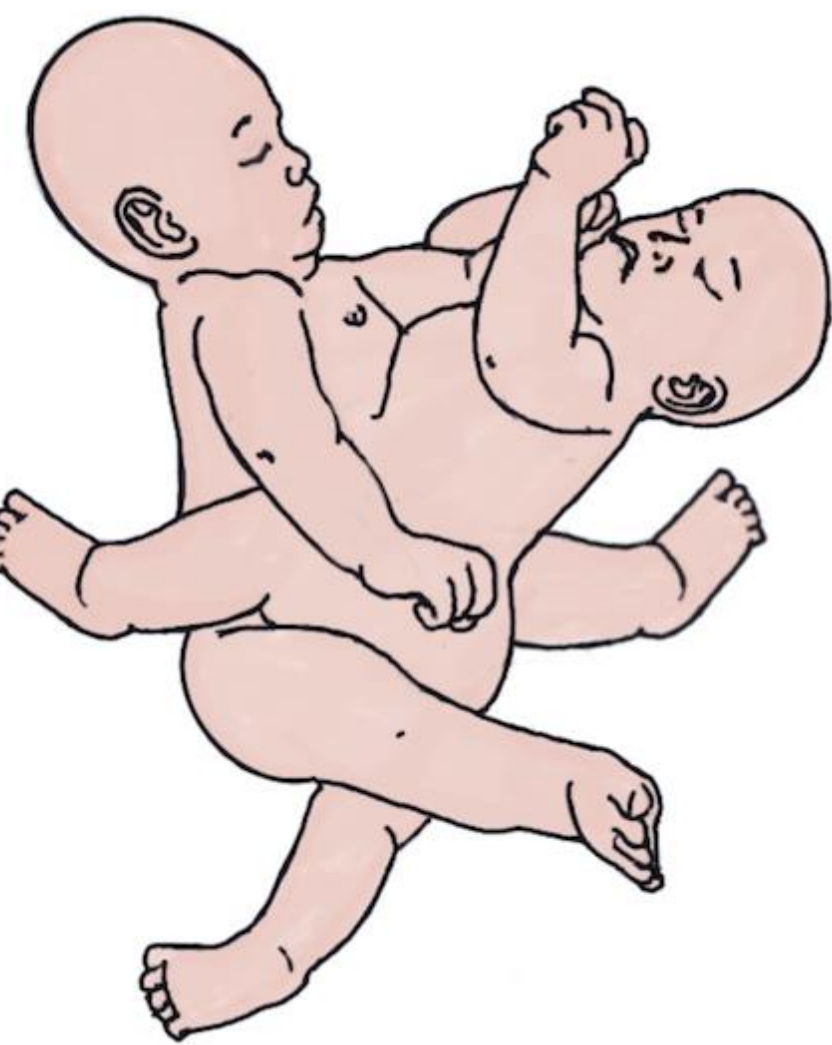
- Tissue expansion in a population with limited mobility carries substantial complication risks.
- Comorbidities may delay separation and compromise survival.
- At our institution, advances in team preparedness, wound care, and reconstructive strategies have contributed to successful separations.



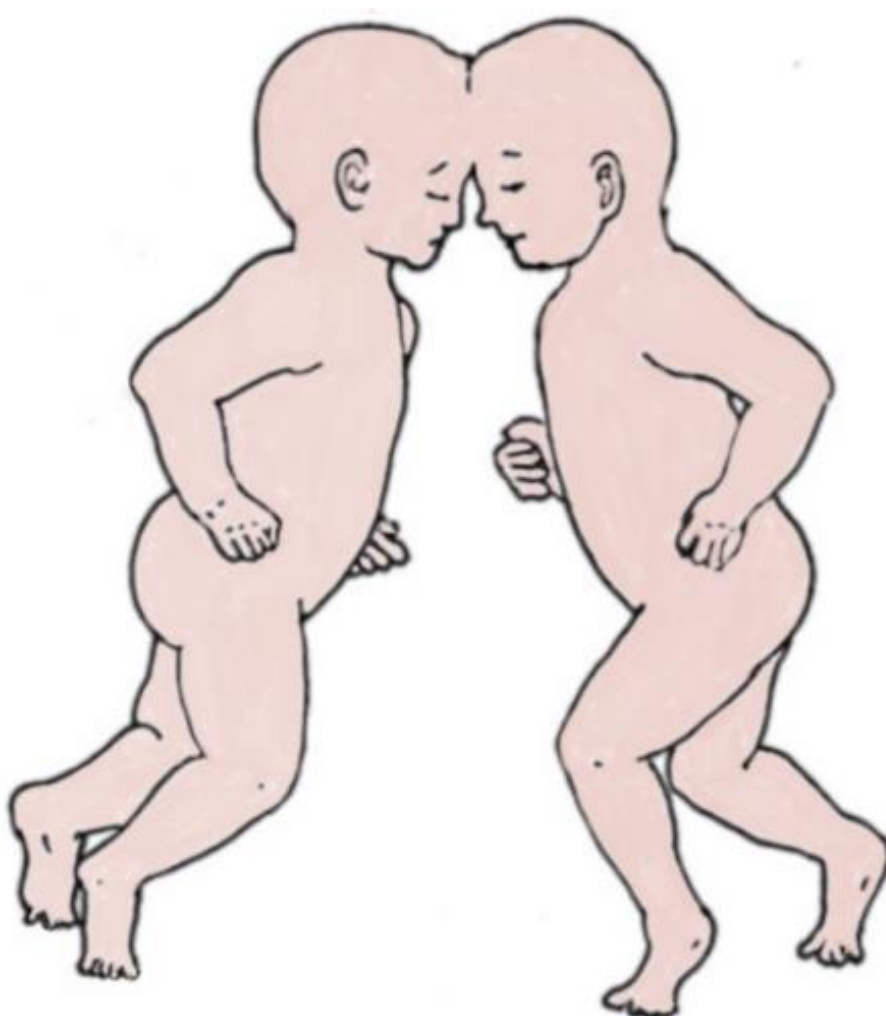
Thoraco-omphalopagus (5)



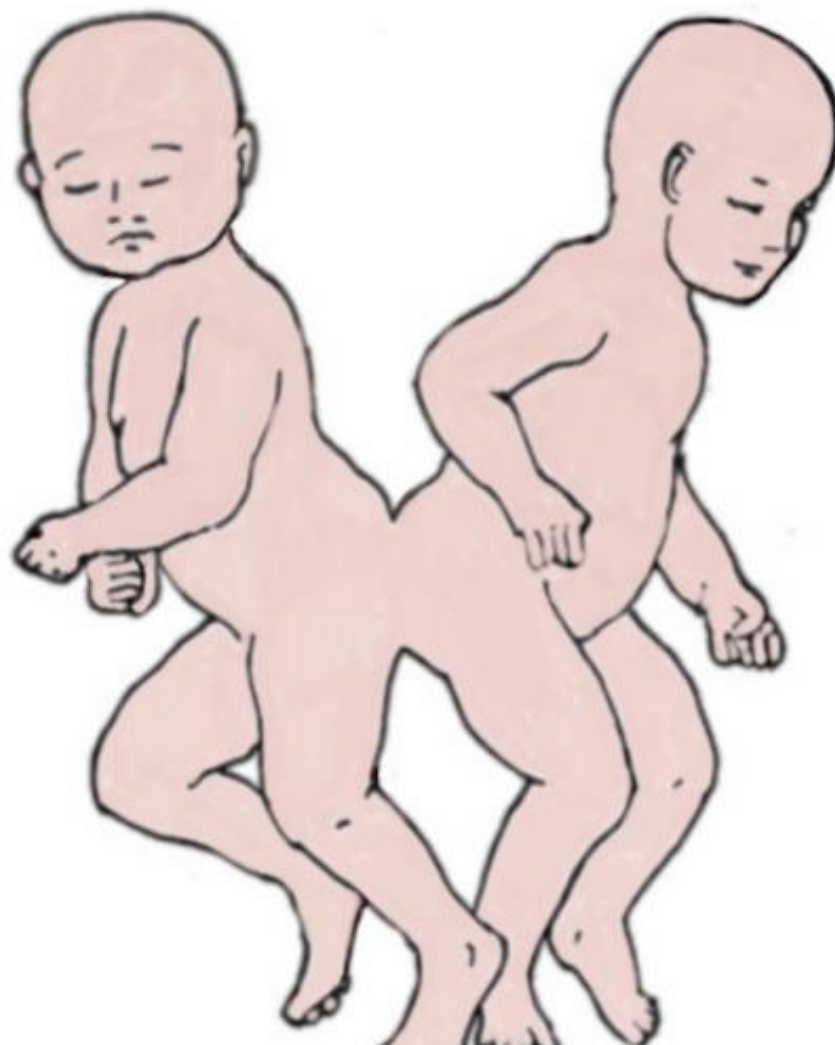
Omphalopagus (1)



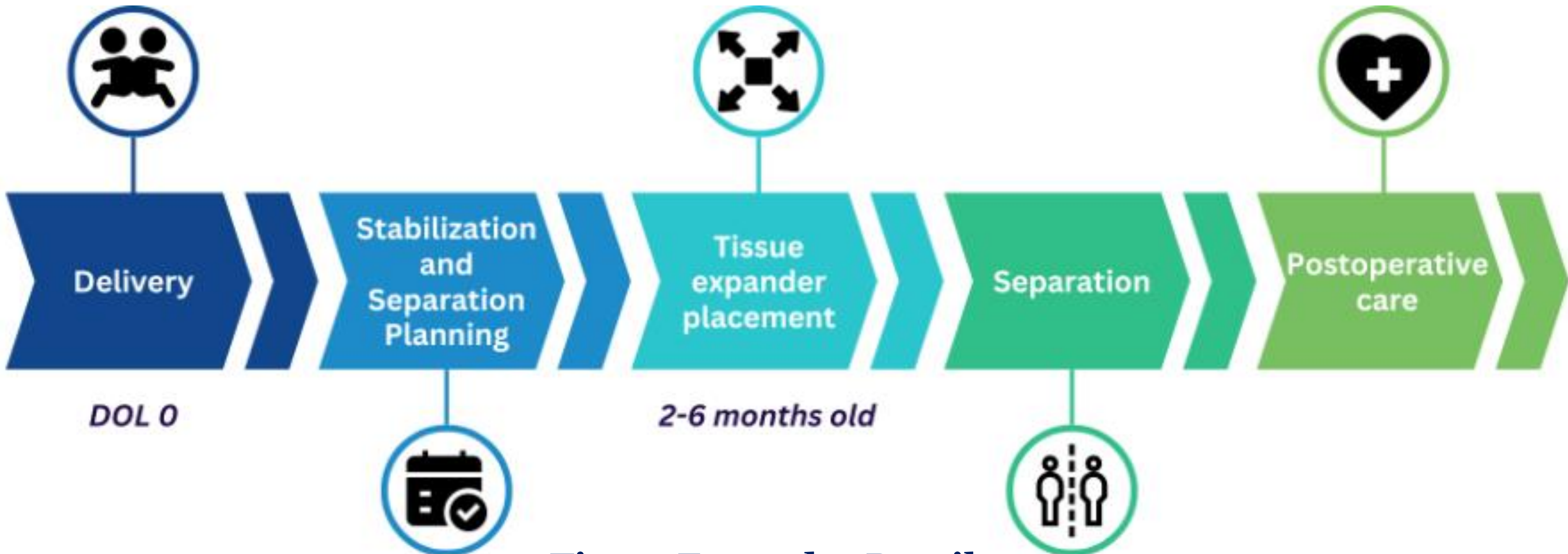
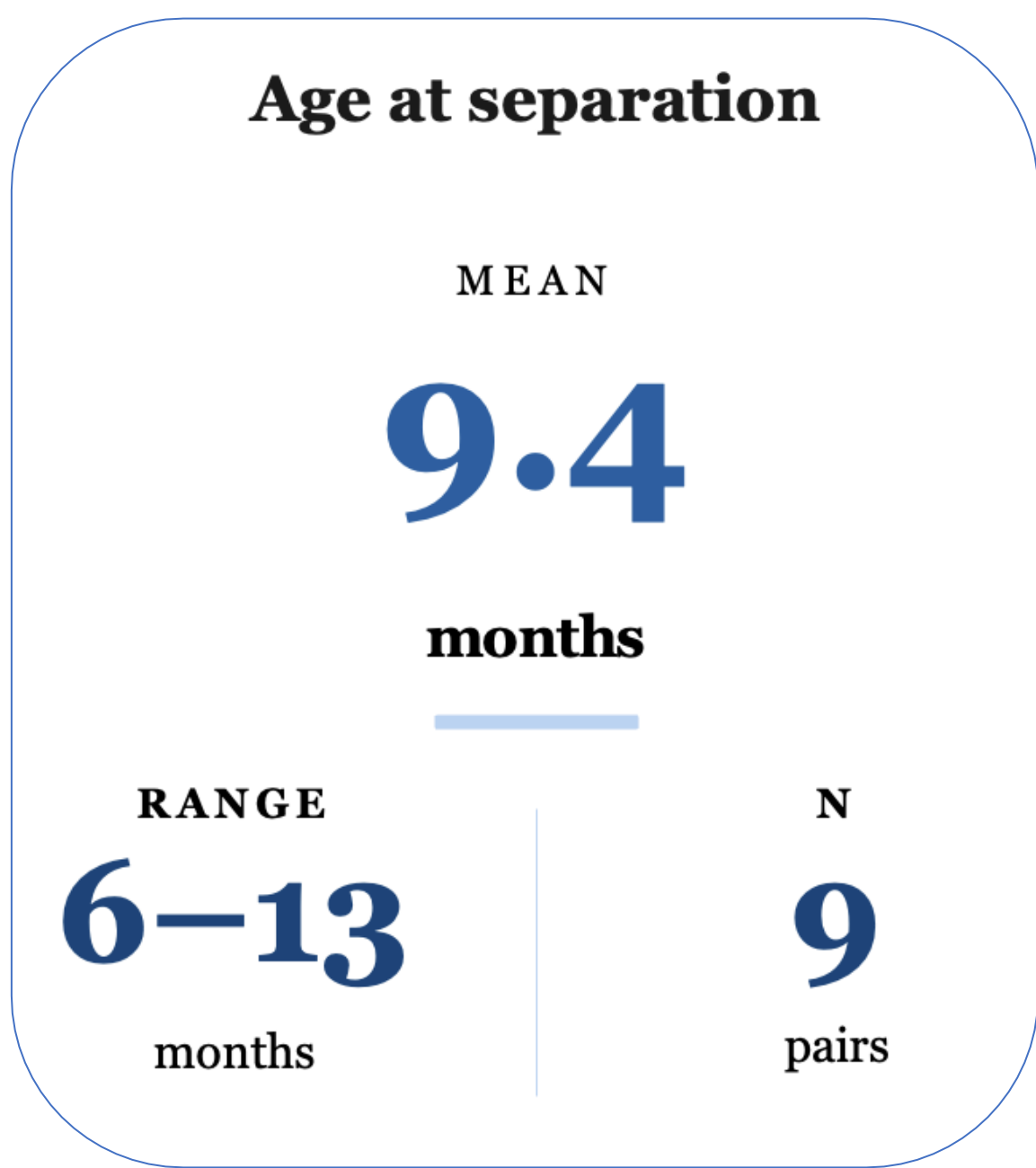
Thoraco-omphalo-ischiopagus (1)



Craniopagus (1)



Pyopagus (1)



Tissue Expander Details

Case #	Type	Age at TE	Expansion duration	TE complications
1	Thoraco-omphalopagus	3.5 mo.	4.5 mo.	None
2	Thoraco-omphalopagus	3 mo.	5 mo.	Dehiscence (4 cm) + seroma at incision line → drainage, debridement, JP drain
3	Craniopagus	6 mo.*	4 mo.	Seroma + malposition (2 expanders) → revision, JP drain
4	Pyopagus	2 mo.; 5 mo.	1 mo.; 1 mo.	Vascular congestion + dehiscence (4×2 cm), Twin B R flank → wound care; seroma → debridement + TE replacement; repeat dehiscence → full TE removal + healing interval; re-insertion: mild dehiscence → conservative management
5	Thoraco-omphalopagus	6 mo.	4 mo.	Port migration (2 expanders) → exchange + retention sutures; TE medialization + leak → replacement
6	Thoraco-omphalopagus	4 mo.	3 mo.	None
7	Thoraco-omphalopagus	6 mo.	7 mo.	Seroma + tissue breakdown over expander site → wound care
8	Omphalopagus	5 mo.	5 mo.	None
9	Thoraco-omphalo-ischiopagus	5 mo.	6 mo.	None

Overall Survival

16 / 18
88.9%

Both deaths attributable to pre-existing comorbid conditions.

Case 1: Twin B
Died at 16 months
Progressive congenital heart disease (hypoplastic left heart syndrome)

Case 7: Twin A
Died at 15 months
Multi-organ failure and septic shock

Postoperative complications (3 of 9 sets)

Case 6: Thoraco-omphalopagus
Mid-sternal wound dehiscence in both twins → managed with VAC dressings; resolved prior to discharge

Case 7: Thoraco-omphalopagus
Sternal defects in both twins; chest wound dehiscence in Twin B → VAC dressing applied

Case 9: Thoraco-omphalo-ischiopagus
Intra-abdominal sepsis secondary to bowel perforation in both twins → 3 reoperations each; staged mesh replacement; definitive closure with vicryl mesh + porcine ADM; residual dehiscence managed with wound care