

Risk Stratification of Transcranial Midface Advancement in Syndromic Craniosynostosis: 20-year Experience

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BACKGROUND

- Transcranial midface advancement can have profound benefits for patients with syndromic craniosynostosis, but is associated with high morbidity
- Our institution has adopted posterior vault distraction osteogenesis (PVDO) as a first-line intervention for cranial expansion in these patients
- As a result of vault expansion from PVDO, many patients have undergone transcranial midface advancement without a prior frontal vault surgery
- It is possible that midface advancement in the setting of decreased scarring and dural adhesions favorably influences the risk profile of these operations

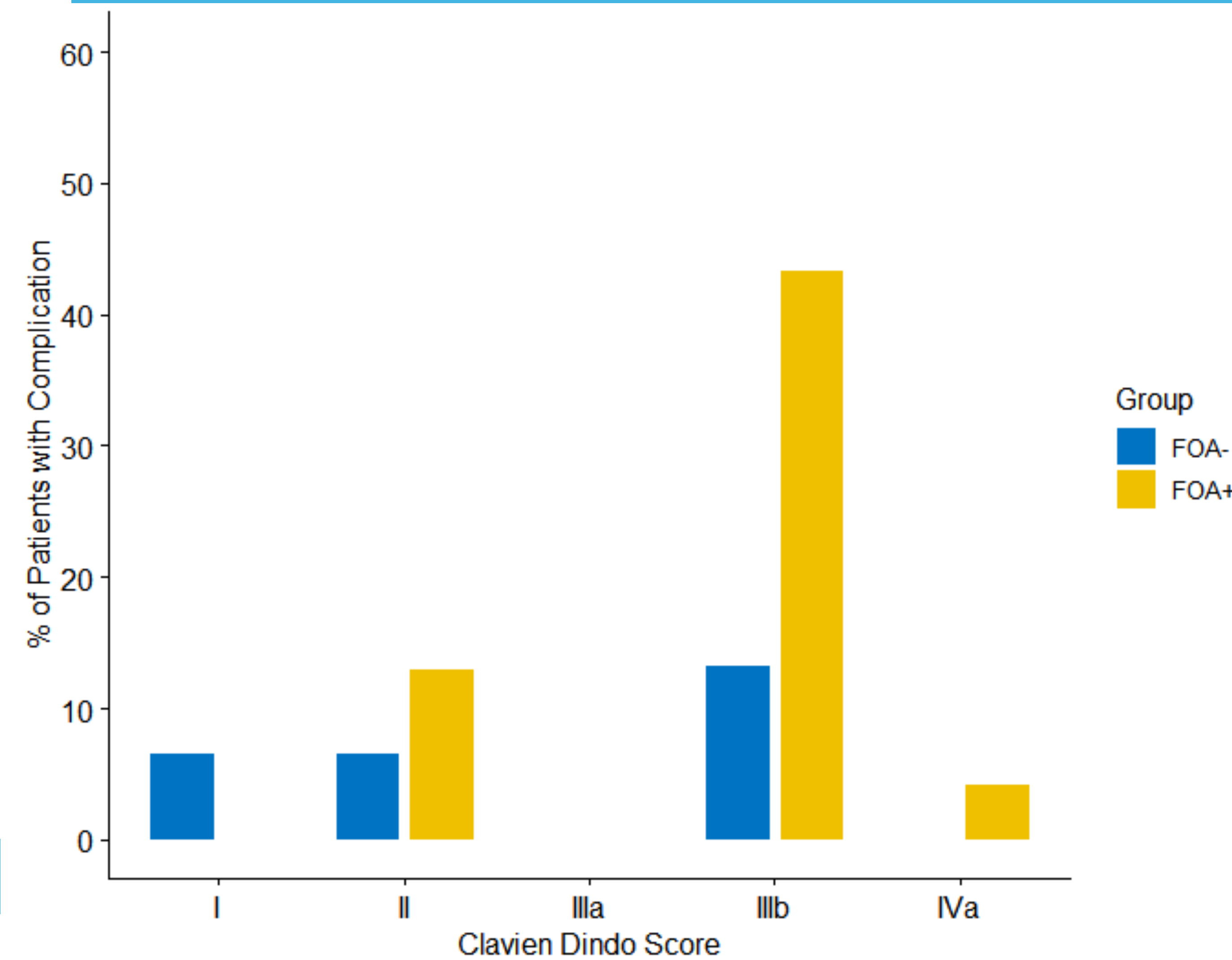
OBJECTIVES

- Compare perioperative outcomes in patients undergoing transcranial midface advancement with and without history of prior frontal vault remodeling (FOAR)

METHODS

- Retrospective review of patients undergoing transcranial midface advancement from 2000-2022
- Patients divided into two cohorts (FOA-, FOA+)
- Perioperative outcomes (operative duration, blood loss, LOS, and complications (Clavien-Dindo) compared between groups

RESULTS



	FOA- (%)	FOA+ (%)	p
N	15	23	
Minor Complications (I-II)	2 (13)	3 (13)	
Surface Infection/Cellulitis	1 (7)	3 (13)	0.280
Seroma	1 (7)	0 (0)	0.395
Major Complications (IIIa+)			
Reoperation	2 (13)	11 (48)	0.053
Deep Infection	2 (13)	9 (39)	0.087
Hardware Malfunction	0 (0)	2 (9)	0.791
Patients with Major Complication	2 (13)	11 (52)	0.028
Patients with Any Complication	4 (27)	14 (61)	0.039
Clavien-Dindo score			0.260
I	1 (7)	0 (0)	
II	1 (7)	3 (17)	
IIIa	0 (0)	0 (0)	
IIIb	2 (13)	10 (39)	
IVa	0 (0)	1 (4)	
IVb	0 (0)	0 (0)	
V	0 (0)	0 (0)	

RESULTS

- 38 Patients (15 FOA-, 23 FOA+) included
- FOA- group had fewer major complications (13% vs 48%, p=0.028)
- Dural laceration was less common in the FOA- group (20% vs 65%, p=0.006)
- Length of hospital stay was greater in the FOA+ group (7 days, IQR 6-10) than the FOA- group (6 days, IQR 5-6, p=0.037)
- There were no cases of postoperative CSF leak in the FOA- groups and four cases in the FOA+ group (p=0.139)
- Operative time was 295 minutes (IQR 258-264) in the FOA- group and 332 minutes (IQR 298-390) in the FOA+ group (p=0.128).

CONCLUSIONS

- Prior FOA was associated with an increased rate of major complications and dural tears in patients with syndromic craniosynostosis undergoing fronto-facial surgery
- Options for cranial vault expansion that avoid the frontal region, such as PVDO, may favorably alter the risk profile of fronto-facial advancement