

BACKGROUND

- Demand for facial feminization surgery (FFS), which seeks to align secondary sex characteristics and gender identity, continues to rise.¹
 - FFS includes a group of craniomaxillofacial procedures including supraorbital ridge burring, hairline advancement, blepharoplasty, rhinoplasty, anterior frontal wall setback, malar augmentation, genioplasty, chondrolaryngoplasty, and mandibular angle reduction.²⁻⁵
 - Research emphasizes focus on the brows, nose, mandible, and chin as these are most influential in gender perception.⁵⁻⁶
 - Individual surgical plans vary based on baseline facial features, patient priorities, and surgeon expertise and experience.³
 - Initially performed as staged procedures, full facial feminization surgery (F-FFS) which performs multiple procedures involving aspects of the upper, middle, and lower facial thirds concurrently has become more popular.⁷
- PURPOSE**
- To date, studies analyzing the safety of F-FFS have been limited by small sample sizes and single-institution designs.⁷⁻¹⁰
 - This study aimed to assess post-operative outcomes, specifically complication rates, in partial- versus full-FFS using a national surgical database to evaluate relative safety.

METHODS

SEARCH STRATEGY

- Database: American College of Surgeons National Surgical Quality Improvement Program (ACS-NSQIP) for 2016 to 2021
- International Classification of Diseases, Tenth Revision (ICD-10) codes were used to identify patients with primary diagnosis of transgenderism or gender identity disorder
- Current Procedural Terminology (CPT) codes used to isolate patients who underwent FFS. Tracheal and laryngeal procedures were not included in analysis.

PATIENT STRATIFICATION

- Identified cohort was stratified by number and location of concurrent procedures
 - Full-FFS was defined as augmentation of the upper, middle, and lower facial thirds in a single anesthetic event
 - Partial-FFS was defined as surgery on only one or two facial thirds in a single anesthetic event
 - Multi-site surgery included patients with any facial procedure performed concomitantly with any non-facial surgery.

RESULTS

Table 1. Patient and surgical characteristics stratified by type of FFS

Characteristic	Partial	Full	Multi-Site	Overall	P-Value
Total n (%)	156 (63.7)	75 (30.6)	14 (5.7)	245 (100.0)	
Age mean (SD)	34.0 (11.0)	36.1 (12.5)	35.2 (9.6)	34.7 (11.4)	0.404
BMI mean (SD)	28.3 (7.2)	29.2 (5.6)	25.9 (5.6)	28.4 (6.7)	0.043
Race n (%)					0.028
White	100 (64.1)	63 (84.0)	10 (71.4)	173 (70.6)	
Black	28 (17.9)	5 (6.7)	2 (14.3)	35 (14.3)	
Asian	11 (7.1)	2 (2.7)	0 (0.0)	13 (5.3)	
American Indian	0 (0.0)	1 (1.3)	1 (7.1)	2 (0.8)	
Native Hawaiian	4 (2.6)	0 (0.0)	0 (0.0)	4 (1.6)	
Other / Unknown	13 (8.3)	4 (5.3)	1 (7.1)	18 (7.3)	
Ethnicity n (%)					0.011
Hispanic	32 (20.5)	19 (25.3)	1 (7.1)	52 (21.2)	
Non-Hispanic	122 (78.2)	55 (73.3)	10 (71.4)	187 (76.3)	
Unknown	2 (1.3)	1 (1.3)	3 (21.4)	6 (2.4)	
Smoking History* n (%)	15 (9.6)	5 (6.7)	1 (7.1)	21 (8.6)	0.854
Diabetes Mellitus n (%)	3 (1.9)	4 (5.3)	1 (7.1)	8 (3.3)	0.172
ASA classification					0.823
1-No Disturbance	39 (25.0)	16 (21.3)	2 (14.3)	57 (23.3)	
2-Mild Disturbance	104 (66.7)	52 (69.3)	12 (85.7)	168 (68.6)	
3-Severe Disturbance	12 (7.7)	7 (9.3)	0 (0.0)	19 (7.8)	
4-Life Threatening	1 (0.6)	0 (0.0)	0 (0.0)	1 (0.4)	
LOS (days) mean (SD)	0.89 (2.6)	0.99 (0.4)	0.71 (0.7)	0.91 (2.1)	0.890
OR Time (minute) mean (SD)	269.8 (102.6)	375.8 (84.7)	320.0 (136.2)	305.1 (110.5)	<0.001
Setting n (%)					0.131
Inpatient	45 (28.8)	15 (20.0)	6 (42.9)	66 (26.9)	
Outpatient	111 (71.2)	60 (80.0)	8 (57.1)	179 (73.1)	
Surgical Specialty n (%)					<0.001
Plastic Surgery	66 (42.3)	11 (14.7)	12 (85.7)	89 (36.3)	
Otolaryngology	89 (57.1)	64 (85.3)	1 (7.1)	154 (62.9)	
General Surgery	1 (0.6)	0 (0.0)	0 (0.0)	1 (0.4)	
Urology	0 (0.0)	0 (0.0)	1 (7.1)	1 (0.4)	
Procedures Done n (%)					<0.001
1	9 (5.8)	0 (0.0)	0 (0.0)	9 (3.7)	
2	38 (24.4)	0 (0.0)	2 (14.3)	40 (16.3)	
3	46 (29.5)	4 (5.3)	3 (21.4)	53 (21.6)	
4	24 (15.4)	2 (2.7)	2 (14.3)	28 (11.4)	
5+	39 (25.0)	69 (92.0)	7 (50.0)	115 (46.9)	

*within the past year

ADDITIONAL VARIABLES

- Sociodemographic, clinical characteristics, perioperative variables, and complications

STATISTICAL ANALYSIS

- Stata statistical software used to conduct t-, Fisher’s Exact, and analysis of variance tests to evaluate baseline characteristics.
- Multiple logistic regression models assessed differences in overall wound complications, systemic complications, and reoperation rates between groups

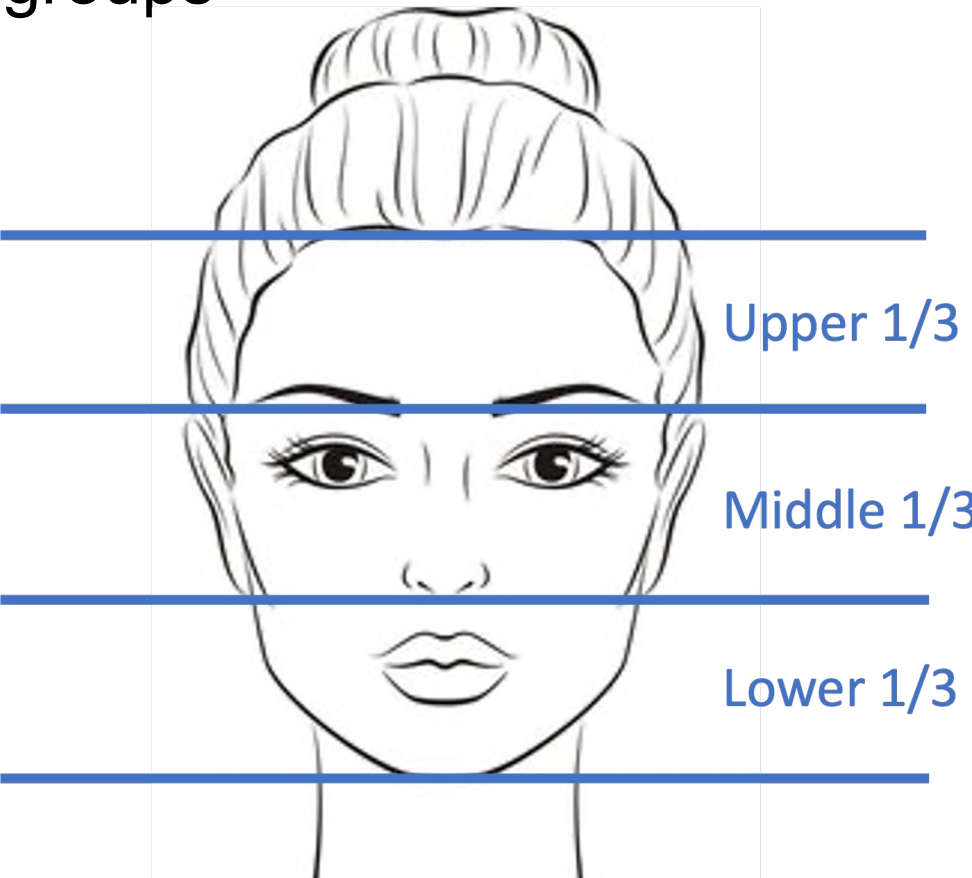


Figure 1. Division of facial features into thirds

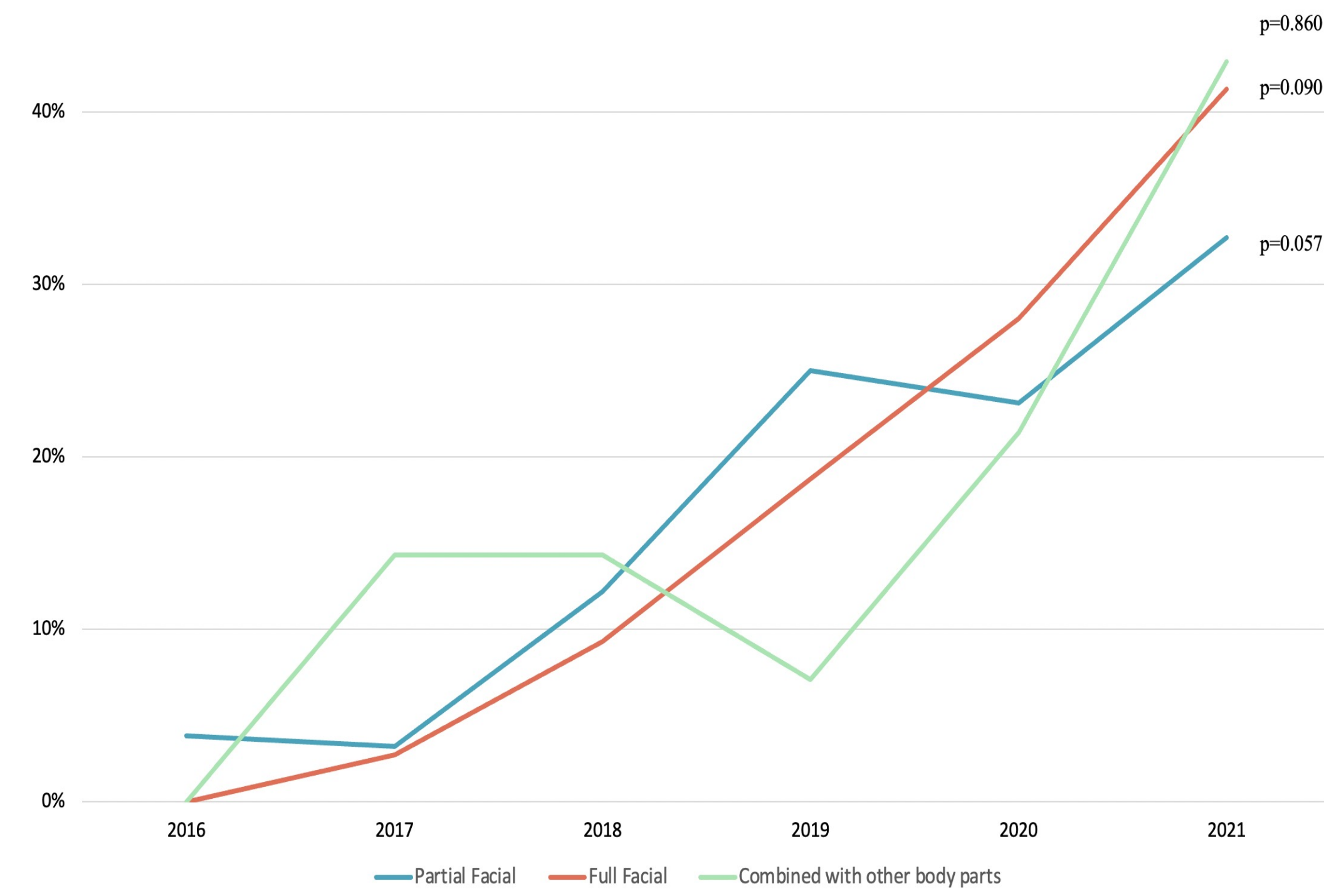


Figure 2. Annual trends in facial feminization surgeries.

Table 2. Postoperative complications stratified by type of FFS

Outcome	Partial	Full	Multi-Site	P-Value
Reoperation* n (%)	0 (0.0)	0 (0.0)	0 (0.0)	–
Wound Complication n (%)				
Superficial Incisional SSI	1 (0.6)	2 (2.7)	0 (0.0)	0.369
Deep Incisional SSI	0 (0.0)	0 (0.0)	0 (0.0)	–
Organ Space SSI	3 (1.9)	0 (0.0)	0 (0.0)	0.625
Wound Disruption	0 (0.0)	0 (0.0)	0 (0.0)	–
Mild Systemic Complications n (%)				
Pneumonia	0 (0.0)	0 (0.0)	0 (0.0)	–
Bleeding Requiring Transfusion	0 (0.0)	0 (0.0)	0 (0.0)	–
DVT	0 (0.0)	0 (0.0)	0 (0.0)	–
Urinary Tract Infection	1 (0.6)	0 (0.0)	0 (0.0)	1.000
Renal Insufficiency	0 (0.0)	0 (0.0)	0 (0.0)	–
Severe Systemic Complications n (%)				0.823
Pulmonary Embolism	0 (0.0)	0 (0.0)	0 (0.0)	–
Unplanned Reintubation	0 (0.0)	0 (0.0)	0 (0.0)	–
Renal Failure	0 (0.0)	0 (0.0)	0 (0.0)	–
Cardiac Arrest	0 (0.0)	0 (0.0)	0 (0.0)	–
Septic Shock	0 (0.0)	0 (0.0)	0 (0.0)	–
All Complications n (%)	5 (3.2)	2 (2.7)	0 (0.0)	1.000

Table 3. Multivariate assessment of total complications by body mass index (BMI), age, number of procedures per anesthetic event, and total operative time.

Variable	OR	95% CI	P-Value
Total Operative Time	0.994	0.986 – 1.004	0.268
BMI	1.062	0.964 – 1.171	0.218
Age	1.068	1.002 – 1.138	0.045
Number of Procedures Per Anesthetic Event			
1		Reference	
2	0.188	0.011 – 2.949	0.234
3	0	0	–
4	0	0	1.000
5+	0.274	0.016 – 4.644	0.370

DISCUSSION

- Performance of multiple procedures during a single anesthetic event has several potential benefits including decreased overall operative time, recovery time, and cost.
- Despite initial concerns including disrupted blood supply and prolonged surgical duration,¹⁰ this study demonstrates that concurrent procedures involving all three anatomic segments of the face may be performed safely.
- Overall complication rates for both partial and full-FFS were lower than those previously reported by most smaller, single-institution studies.^{7-8,10}
- Of the procedures involving multiple sites, 9 involved breast augmentation and 5 involved genital reconstruction or dilation. Despite the potential risk of cross contamination between surgical sites, these patients did not demonstrate increased infection rates.

LIMITATIONS

- The low overall complication rates and relatively small populations of the full-FFS and multi-site groups may have led to under-detection of differences that may become more apparent with larger sample sizes. This is important as these are the groups theoretically more likely to experience complications.
- Due to database limitations, we were unable to examine other factors including the use of multiple surgeons, complications occurring outside the 30-day window, history of prior facial feminization procedures, patient age at the time transition was begun, and hormone therapy use.
- Assumed based on ICD-10 code that all procedures were performed as part of gender affirmation surgery, but it is possible that some interventions were performed for other reasons.

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