Complicações e qualidade de vida em cirurgia de afirmação de gênero facial: revisão sistemática

Complicaciones y calidad de vida en la cirugía de afirmación de género facial: revisión sistemática
Complications and quality of life in facial gender affirmation surgery: systematic review

RESUMO

Introdução: A cirurgia de afirmação facial de gênero (FGAS) é um procedimento essencial no processo de transição para indivíduos trans. Esta revisão sistemática objetivou descrever as complicações e a qualidade de vida de pacientes submetidos à cirurgia de afirmação facial de gênero. **Métodos**: Uma revisão sistemática coletou artigos nas bases de dados PUBMED, Embase, SCOPUS, Biblioteca Virtual de Saúde (BVS) e Cochrane até dezembro de 2024. Foram incluídos estudos que examinavam complicações pós-operatórias e qualidade de vida após FGAS. A qualidade dos artigos foi avaliada pela Escala Newcastle-Ottawa. **Resultados**: Nos quinze estudos selecionados, complicações foram raras, com taxas variando de acordo com o tipo de procedimento e fatores do paciente. Complicações menores comuns incluíram infecções de feridas, hematomas e hipoestesia nervosa transitória. Complicações, como embolia pulmonar, foram raras. A qualidade de vida melhorou consistentemente entre estudos, aumentando a satisfação e reduzindo o sofrimento psicológico no pós-operatório. **Conclusão**: FGAS é uma intervenção segura para melhorar a saúde mental e a qualidade de vida de indivíduos transexuais. Pesquisas futuras devem focar na padronização das medidas de avaliação da qualidade de vida e na avaliação dos resultados a longo prazo para melhorar ainda mais o atendimento ao paciente. **Palavras-chave**: Pessoas Transgênero; Face; Complicações Pós-operatórias; Qualidade de Vida.

RESUMEN

Introducción: La cirugía facial de afirmación de género (FGAS) es un procedimiento esencial en el proceso de transición para personas transgénero. Esta revisión sistemática tuvo como objetivo describir las complicaciones y la calidad de vida de los pacientes sometidos a FGAS. **Métodos**: Los artigos se recopilaron de las bases de datos PUBMED, Embase, SCOPUS, Biblioteca Virtual de Salud (BVS) y Cochrane hasta diciembre de 2024. Se incluyeron estudios que examinaron las complicaciones postoperatorias y la calidad de vida después de FGAS. **Resultados**: En los quince estudios seleccionados, las complicaciones fueron poco frecuentes, con tasas que variaron según el tipo de procedimiento y los factores del paciente. Las complicaciones menores comunes incluyeron infecciones de heridas, hematomas e hipoestesia nerviosa transitoria. Las complicaciones, como la embolia pulmonar, fueron poco frecuentes. La calidad de vida mejoró de forma consistente en todos los estudios, aumentando la satisfacción y reduciendo el distrés psicológico en el período postoperatorio. **Conclusión**: FGAS es una

Liliane Lins-Kusterer
ORCID: 0000-0003-3736-0002
Federal University of Bahia, School of Medicine of Bahia, Brazil
E-mail: lkusterer@gmail.com

Tagna Ribeiro Brandão
ORCID: 0000-0002-8276-3145
Federal University of Bahia, School of Dentistry, Brazil
E-mail: tagna.brandao@gmail.com

José Valber Meneses
ORCID: 0000-0001-5538-7108
Federal University of Bahia, School of Medicine of Bahia, Brazil
E-mail: valbermeneses@gmail.com

Fernando Martins Carvalho
ORCID: 0000-0002-0969-0170
Federal University of Bahia, School of Medicine, Brazil
E-mail: fmc.ufba@gmail.com

Rev. Cir. Traumatol. Buco-Maxilo-Fac., Recife v.25, n.4, p. 8-18, out./dez. 2025
Brazilian Journal of Oral and Maxillofacial Surgery - BrJOMS
DOI: https://doi.org/10.70678/rctbmf.v25i4.1178

ISSN 1808-5210 (Online)
ISSN 1679-5458 (Linking)

intervención segura para mejorar la salud mental y la calidad de vida de las personas transgénero. Las investigaciones futuras deberían centrarse en estandarizar las medidas de evaluación de la calidad de vida y evaluar los resultados a largo plazo para mejorar la atención al paciente. **Palabras clave:** Personas Transgénero; Cara; Complicaciones Postoperatorias; Calidad de vida.

ABSTRACT

Introduction: Facial gender affirmation surgery (FGAS) is an essential procedure in the transition process for transgender individuals. This systematic review aims to describe the complications and quality of life of patients undergoing facial gender affirmation surgery. **Methods:** A systematic review was conducted across multiple databases, including PUBMED, Embase, SCOPUS, Virtual Health Library (BVS), and Cochrane, until December 2024. Studies examining postoperative complications and quality of life following FGAS were included. Articles quality was evaluated by using the Newcastle-Ottawa Scale. **Results:** Fifteen studies involving various FGAS procedures met inclusion criteria. Complications were rare, with rates varying by procedure type and patient factors. Common minor complications included wound infections, hematomas, and transient nerve hypoesthesia. Complications, such as pulmonary embolism, were infrequent. Quality of life outcomes consistently improved across studies, with validated tools like FACE-Q and SF-36 showing increases in satisfaction and reductions in psychological distress postoperatively. **Conclusion:** FGAS is a safe intervention for improving the mental health and quality of life of transgender individuals. While complication rates are low, comprehensive surgical planning and postoperative care are crucial for optimizing outcomes. Future research should focus on standardizing quality of life assessment measures and evaluating long-term results to enhance patient care further. **Keywords:** Transgender Persons; Face; Postoperative Complications; Quality of Life.

INTRODUCTION

The term facial gender affirmation surgery (FGAS), including facial feminization surgery (FFS)[1] and facial masculinization surgery (FMS)[2], is a safe procedure that is vital in the transition process for transgender individuals[3]. These surgeries aim to align patients' facial features with their gender identity, thereby improving their psychological well-being and quality of life[1,4]. The importance of facial appearance in gender perception makes FFS a vital component of gender-affirming healthcare. Procedures such as rhinoplasty, forehead contouring, mandibular angle reduction, and genioplasty are commonly performed to achieve a more feminine facial appearance[5] and play a crucial role in the transition process for transgender individuals[3].

Facial feminization surgery (FFS) encompasses a series of cosmetic and reconstructive procedures designed to harmonize facial features and align them with the patient's gender identity. These procedures target soft tissues and underlying bone structures, addressing key aspects of gender recognition. As such, FFS plays a crucial role in reducing dysphoria and improving the overall well-being of transgender individuals[6–9]. The treatment plan for gender dysphoria often includes psychotherapy, hormone therapy, and gender reassignment surgery. Among these, FFS has emerged as a cornerstone of gender transition, often having a more profound psychological impact than genital reconstruction surgery. By improving facial characteristics that directly influences interpersonal interactions, FFS enhances patients' self-esteem and social integration[4,10].

On the other hand, a recent study[6] showed that 55% of transgender patients who underwent procedures in the frontal region of the face were dissatisfied with previous procedures, opting for a surgical reapproach of the frontal-orbital region for additional procedures. The main complaints included insufficient setback of the anterior table of the frontal sinus, inadequate or absent widening of the orbital rim, and an inadequate or unmodified hairline.

To mitigate the undesired effects of FFS, we currently have the advantage of technological development and the incorporation of virtual 3D surgical planning, which offers greater predictability of postoperative results. This has become an important ally in establishing realistic goals for the patient, identifying potential health risk factors, discussing necessary hormonal therapeutic options before a cascade of transition surgeries, and ensuring patient satisfaction during the transition period. Additionally, clear communication and multidisciplinary care can increase patient confidence, alleviate anxiety, and form realistic expectations, creating an environment

where informed patients can achieve their appropriate surgical goals[4,8,11].

Among facial feminization surgery, the literature describes patients' decision to revision surgery[6] of the frontal-orbital region due to a lack of satisfaction after previous procedures. Despite the benefits of FFS, it is essential to consider the potential complications associated with these surgeries[11]. Understanding the risk of complications and their management is critical for ensuring patient safety and optimizing surgical outcomes. Complications can range from minor issues, such as wound infections and hematomas, to more severe problems, such as nerve damage and pulmonary embolism. To minimize these risks, effective preoperative planning, surgical techniques, and postoperative care are essential[6]. A case study reported a patient who developed a sinocutaneous fistula as a delayed complication of forehead recontouring surgery. Although rare, this complication underscores the need for heightened awareness among surgeons about the potential risks of altering the frontal sinus[12].

In addition to physical outcomes, the impact of FFS on mental health and quality of life is another area of interest. Previous studies have shown that FFS can substantially improve patients' self-esteem, social interactions, and overall satisfaction with life. The psychological benefits of aligning one's physical appearance with gender identity are profound, contributing to the reduction of gender dysphoria and enhancing overall well-being[4].

This systematic review aims to describe the complications and quality of life of patients undergoing facial gender affirmation surgery. By examining a comprehensive range of studies, this review seeks to provide a detailed understanding of the risks and benefits associated with FGAS, thereby informing clinical practices and patient outcomes.

METHODS

This study is a systematic review of the literature of observational studies about complications and quality of life of transgender individuals following facial surgery for gender affirmation. The PIOS (Population, Intervention, Outcome, and Study design) was employed to define inclusion and exclusion criteria. Studies of virtual analysis, technical notes, case reports, and literature reviews were excluded. Two comprehensive searches were conducted without date restrictions from February to December 2024 across the PUBMED, Embase, SCOPUS, Virtual Health Library (BVS), and Cochrane databases. Authors conducted the two searches by using the following terms: "transgender persons"[All Fields] AND ("face"[MeSH Terms] OR "face"[All Fields] OR "facial"[All Fields] OR "facials"[All Fields]) AND ("surgery"[MeSH Subheading] OR "surgery"[All Fields] OR "surgical procedures, operative"[MeSH Terms] OR ("surgical"[All Fields] AND "procedures"[All Fields] AND "operative"[All Fields]) OR "operative surgical procedures"[All Fields] OR "general surgery"[MeSH Terms] OR ("general"[All Fields] AND "surgery"[All Fields]) OR "general surgery"[All Fields] OR "surgery s"[All Fields] OR "surgerys"[All Fields] OR "surgeries"[All Fields]) AND "complications"[All Fields]; and "transgender persons"[All Fields] AND ("face"[MeSH Terms] OR "face"[All Fields] OR "facial"[All Fields] OR "facials"[All Fields]) AND ("surgery"[MeSH Subheading] OR "surgery"[All Fields] OR "surgical procedures, operative"[MeSH Terms] OR ("surgical"[All Fields] AND "procedures"[All Fields] AND "operative"[All Fields]) OR "operative surgical procedures"[All Fields] OR "general surgery"[MeSH Terms] OR ("general"[All Fields] AND "surgery"[All Fields]) OR "general surgery"[All Fields] OR "surgery s"[All Fields] OR "surgerys"[All Fields] OR "surgeries"[All Fields]) AND "quality of life"[All Fields].

The retrieved articles were imported into Excel software for management. Two reviewers independently selected the titles and abstracts of the articles. Full texts of potentially eligible studies were retrieved for further assessment. Disagreements between the reviewers were resolved through discussion with a third reviewer. From each included study, the following data were extracted: author's name, year of publication, country, study design, number of cases, type and number of complications, and the mean and standard deviation of quality-of-life domains.

The Newcastle-Ottawa Scale[13] was used to evaluate the quality of the included observational studies. Two independent authors conducted the assessments, and only studies that scored six or higher were included. Any discrepancies were resolved by consensus among the authors. A systematic review was carried out, respecting the recommendations of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses - PRISMA[14,15], and was registered with the PROSPERO database under CRD42024511970.

For the purposes of this review, the various terms referring to facial surgical procedures per-

ISSN 1808-5210 (Online)
ISSN 1679-5458 (Linking)

formed in transgender individuals will be standardized under the term Facial Gender Affirmation Surgery (FGAS). Although the literature employs a range of terms - including facial feminization surgery, facial masculinization surgery, fronto-orbital feminization and hairline advancement, fronto-orbital feminization surgery, deep plane facelift and multiprocedural FGAS, multiprocedural FGAS, and multiprocedural feminization - all will be collectively referred to as FGAS along this manuscript to ensure consistency and clarity. However, surgery denomination was presented in the text and in the tables as reported by each study".

RESULTS

During the identification phase, 270 studies were identified from Scopus, 260 from PubMed, 71 from Embase, 215 from the Virtual Health Library, and two from the Cochrane database, totaling 818. Before the screening process, 417 duplicate studies were removed, leaving 401 unique studies.

All 401 studies were evaluated in the screening phase, excluding 329 based on their titles, deemed out of scope for the review. This left 72 studies for further examination. After reading the abstracts, 53 studies were excluded, reducing the number of studies assessed for eligibility to 19.

During the eligibility assessment phase, the remaining 19 studies were thoroughly evaluated. Of these, four studies were excluded for the following reasons: one letter, two literature reviews, and one report out of scope. Consequently, 15 studies met all the inclusion criteria and were included in the final review. The flow chart diagram (Figure 1) outlines the step-by-step process of identifying, screening, retrieving, and assessing studies for eligibility in the systematic review, ensuring a transparent and thorough selection process.

Table 1 presents the Newcastle-Ottawa Scale ratings for included studies[11,16–29], highlighting their study design and quality scores. Thirteen (86.7%) out of the 15 studies included in this review were published from 2020 onwards. The NOS scores range from 6 to 9, indicating variations in methodological rigor among the studies. Prospective studies scored between 7 and 8, with some studies[16,17,19] achieving higher scores. A prospective cohort study [23] achieved the highest NOS score of 9, indicating the highest quality methodology. Retrospective studies had a wider score range, scoring from 6 to 8[11,17,20,22,24,26–29]. One retrospective study using a national database[27] achieved a moderate NOS score of 6. A retrospective cohort studies scored 8 points[25].

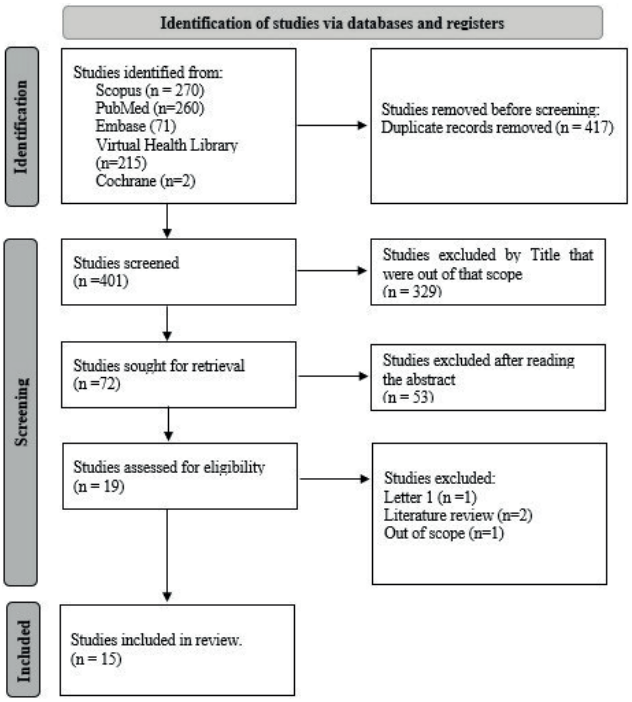

Figure 1 - Flowchart with studies in this review.

Table 1 - Newcastle-Ottawa Scale ratings for included studies.

Authors	Type of Study	NOS Score
Regan et al.[11], 2021	Retrospective	8
Ainsworth and Spiegel[16], 2010	Prospective	7
Perrillat et al.[17], 2023	Retrospective	7
Schmidt et al.[18], 2023	Prospective	8
La Padula et al.[19], 2023	Prospective	7
Mookerjee et al.[20], 2023	Retrospective	7
Nguyen et al.[21], 2024	Retrospective	8
Gupta et al.[22], 2019	Retrospective	6
Morrison et al.[23], 2020	Prospective cohort	9
Chou et al.[24], 2020	Retrospective	8
Chaya et al.[25], 2021	Retrospective cohort	8
Daurade et al.[26], 2022	Retrospective	7
Murphy et al.[27], 2022	Retrospective	6
Hazkour et al.[28], 2022	Retrospective	6
Salesky et al.[29], 2022	Retrospective	7

Overall, the NOS scores illustrate the robustness of the included studies, supporting the reliability of the findings in this review.

Table 2 summarizes the complications reported across studies on gender-affirming facial surgeries (FGAS) and related procedures. The findings show consistent trends in complications, including minor issues such as infections, hematomas, and temporary nerve weakness, which were managed conservatively. Major complications, such as pulmonary embolism or cellulitis, were rare across all studies.

Table 2 - Complications in various types of facial gender surgery.

Author(s)	Type of Study	Sample (N)	Type of Surgery	Reported Complications
Regan et al.[11] (2021)	Retrospective	N=60	Multiprocedural FGAS	Post-operative complications (n=8). The most common were infection (n=3), wound dehiscence, plate exposure, hematoma, and transient marginal mandibular nerve weakness. Poor outcomes: rhinoplasty (n=7), genioplasty (n=2), brow recontour (n=1), Coleman fat transfer (n=1), Le Fort osteotomy (n=1), rhytidectomy (n=2), and blepharoplasty (n=2).
Perrillat et al.[17] (2023)	Retrospective	N=48	Fronto-orbital feminization and hairline advancement	Cement-related infection, unsightly scars (n=3), asymmetry of the frontal eminence (n=1).
Schmidt et al.[18] (2023)	Prospective	N=42	Fronto-orbital feminization surgery, and Multiprocedural FGAS	Temporary frontal paresthesia (n=27), unsightly scars (n=9), regrets about the procedure (n=1).
La Padula et al.[19] (2023)	Prospective	N=36	Deep plane facelift and Multiprocedural FGAS	Hematoma (n=1)
Nguyen et al.[21] (2024)	Retrospective	N = 242 Same-day discharge, N = 154 Post-operative admission, N = 88	Multiprocedural FGAS	Post-operative admission: Composite complications n=17 Emergency department visits n=19, Readmission from emergency department, n=1 Same-day discharge: Composite complications, n=24 Emergency department visits, n=28 Readmissions from emergency department, n=3
Gupta et al.[22] (2019)	Retrospective	N=25	Multiprocedural feminization	Pulmonary embolism (n=1), Cheek implant infection (n=2) Mandible incision infection (n=1), Facelift hematoma (n=1).
Morrison et al.[23] (2020)	Prospective	N=66	Multiple procedures	Hypertrophic scarring (n=5), orbital emphysema/hematoma (n=4), nasal hematoma/epistaxis (n=2), alopecia (n=1), iatrogenic jowling (n=1).
Chou et al.[24] (2020)	Retrospective	N=121	Multiprocedural FGAS	Minor wound complication (n=18) Return to the emergency department due to pain and wound evaluations (n=12), Epistaxis (n=3), Major wound infections (n=3), Ophthalmologic complications (n=3), Pulmonary embolism (n=1), Pulmonary edema (n=1)
Chaya et al.[25] (2021)	Retrospective cohort	Full FFS, N=51 Partial FFS, N=21	Full and partial FFS	Higher postoperative complication rates were observed in patients with higher body mass index. For Partial FFS, 1 out of 21 patients had complications, while for Full FFS, 4 out of 51 patients experienced complications.
Daurade et al.[26] (2022)	Retrospective	Trans-oral mandibular angle resection, N=7 Cervicofacial lift (CFL) approach for mandibular angle resection, N=14	Mandibular angle resection (trans-oral and CFL approaches)	Trans-oral: edema (n=6), pain (n=5), transient inferior alveolar nerve injury (n=1), and facial nerve injury (n=1). Cervicofacial Approach: edema (n=14), pain (n=9), transient inferior alveolar nerve injury (n=1).
Murphy et al.[27] (2022)	Retrospective	N=203	Multiprocedural FGAS	Surgical site infections (n=7), urinary tract infection (n=1)
Hazkour et al.[28] (2022)	Retrospective	N=31	Multiprocedural FGAS	Postoperative infections (n=6)
Salesky et al.[29] (2022)	Retrospective	77	Multiprocedural FGAS	Minor complications included surgical site infection (n=3), dehiscence (n=2), seroma (n=2), and other medical complications (n=4)

Facial feminization surgery (FFS) is generally considered a safe and effective procedure, as demonstrated across various studies. In a study analyzing FFS complications, hypertrophic scarring was the most frequent issue, affecting five patients, while orbital hematomas and orbital emphysema occurred in four cases. Other complications included nasal hematomas and epistaxis in

ISSN 1808-5210 (Online)
ISSN 1679-5458 (Linking)

two patients each, along with anterior alopecia and "witch's chin" deformity after bony manipulation. Severe complications requiring intervention, such as scar correction or hematoma drainage, were rare (6.1%), indicating a low overall complication rate and reflecting the safety of FFS when appropriately planned[23].

A retrospective cohort study evaluating 121 patients undergoing 594 FFS procedures found that minor wound complications were the most common, occurring in 14.9% of cases and requiring only local care. More severe complications, such as wound infections (2.5%), ophthalmologic issues (2.5%), pulmonary embolism (0.8%), and pulmonary edema (0.8%), were uncommon. Emergency department visits were reported in 9.9% of patients, primarily for wound care and pain management, while major complications affected only 6.6% of patients, further underscoring the safety of multilevel FFS procedures[24].

An analysis of 77 patients undergoing full or partial FFS revealed low complication rates, with 7.8% of full FFS cases and 4.8% of partial FFS cases experiencing issues. A higher body mass index (BMI) was strongly associated with complications, suggesting BMI as a potential risk factor[25]. Similarly, a study focusing on mandibular angle resection in FFS highlighted the safety of both trans-oral and cervicofacial lift approaches. No major complications, such as infections or thrombosis, were reported. Minor issues, including transient infra-alveolar nerve hypoesthesia (10%) and facial nerve weakness (5%), resolved spontaneously, and edema, observed in 95% of cases, dissipated within a month[26].

Another retrospective review of 60 patients across 88 FFS operative sessions reported complications in 9.1% of cases. The most frequent issues included infections, wound dehiscence, plate exposure, hematomas, and transient nerve weakness. Despite these occurrences, the study reaffirmed FFS's overall safety and efficacy when performed by skilled surgeons[11].

In an analysis of 203 facial gender confirmation surgeries, a low complication rate of 3.9% was reported. The most common issue was surgical site infections (3.4%), followed by a single urinary tract infection (0.5%). There were no readmissions or unplanned reoperations within 30 days, and no relevant associations were identified between smoking or BMI, and complications[27]. A similar retrospective analysis of 77 patients undergoing staged gender-affirming facial surgeries noted minor complications such as infections (5%), dehiscence (3%), and seroma (3%). Medical complications unrelated to surgery occurred in 6% of cases, with a low 30-day readmission rate of 1.5%[29]. A retrospective analysis of 25 patients undergoing multi-procedural FGAS reported complications such as delayed pulmonary embolism, cheek implant infections, mandible incision infection, and facelift hematoma. No cases of tissue necrosis were observed, demonstrating the safety of combining multiple procedures when conducted under appropriate precautions[22].

In a prospective study involving 36 transgender women undergoing a deep plane facelift, the procedure demonstrated a strong safety profile. There were no major complications, and a single hematoma (2.8%) was effectively managed with active surveillance. No infections, nerve injuries, or skin slough were observed[19]. Similarly, a prospective study of 42 transgender women undergoing frontal-orbital feminization reported no major complications. Minor issues included temporary frontal paresthesia in 65% of cases and unsightly scars in 53% of patients using the precapillary approach[18].

Finally, an analysis of 242 patients undergoing ambulatory and admitted FFS categorized complications into minor and major events. Minor complications included temporary facial nerve palsy (7.02%) and surgical site infections (5.37%). Major complications, such as hematomas, abscesses, and pneumonia, were rare, with a composite rate of 1.6%. The most common reasons for emergency department visits were pain (4.96%), infection (4.13%), nausea/vomiting (2.48%), and shortness of breath (2.48%). Major complications were rare and similar between groups (1.30% for ambulatory care vs. 3.41% for admission). Complications included chin cellulitis treated with antibiotics, pneumonia, two facial abscesses, and a hematoma. No emergency surgeries or permanent nerve injuries occurred[21].

Table 3 presents quality of life (QoL) outcomes from studies evaluating facial feminization surgeries (FFS) and gender-affirming procedures. Questionnaires, including SF-36v2, FACE-Q, and custom tools, assessed satisfaction, appearance-related distress, and psychosocial impact. Most studies report relevant improvements in patient satisfaction and psychological well-being following FFS. Tools such as FACE-Q captured enhancements in specific facial areas, such as the nose, jawline, and forehead, alongside reductions in psychological distress. These outcomes underscore the importance of integrating validated QoL measures in future research to comprehensively evaluate surgical interventions' impact.

Table 3 - Quality of life outcomes reported by included studies.

Author(s)	Type of Study	Sample (N)	Questionnaires Used	Quality of Life Outcomes
Regan et al.[11] (2021)	Retrospective	N=60	Satisfaction inferred from clinical notes	Overall satisfaction noted in 56 (93.3%) patients; 4 patients (6.7%) reported continued dissatisfaction post-revision.
Ainsworth and Spiegel.[16] (2010)	Prospective	FFS=75; No FFS=172	SF36v2, Facial Outcomes Evaluation	Quality of life measured by the Facial Outcomes Evaluation score (mean±sd) among those who had FFS (76,0±17.7)) than those who did not (mean score (44.3±15.7). SF36v2 mental component summary (MCS) score (mean±sd) for those who had GRS, FFS, or both (50.0±8.9) was similar to the general female population (48.9±10.0), while transwomen without surgery had significantly lower mean scores (39.5±7.3). Social function domain mean score for those who had FFS (50.4±6.8) was better than among those who did not (44.2±6.2).
Perrillat et al.[17] (2023)	Retrospective	N=48	Facial Feminization Surgery Outcomes (FFS) Face-Q	FFS Outcomes: 67.2% satisfied with outcomes; 56.3% felt their faces were "very much" or "completely" feminine. Face-Q™: 79% satisfied with eyebrow position; 83.4% found their foreheads natural, 81.3% found them younger, 77.1% satisfied with smoothness.
Schmidt et al.[18] (2023)	Prospective	N=42 (two patients lost of follow-up)	FACE-Q	Improvements: Overall facial appearance (from 33.6±19.4 to 70.1±21.1), forehead and eyebrow appearance (from 38.3±19.7 to 80.1±15.9), wrinkles between eyebrows (from 54.1±26.7 to 82.6±19.9), psychological distress (from 58.1±18.1 to 24.6±24.5).
La Padula et al.[19] (2023)	Prospective	N=36	Satisfaction with Life Scale (SWLS) and Subjective Happiness Scale (SHS) Face-Q	SWLS: Preoperative 20.8±6.2; Postoperative 31.3±3.7. SHS: Preoperative 13.15±4.7; Postoperative 26.2±1.5. Face-Q: Improvements in appearance-related distress, satisfaction with cheeks, lower face, jawline, and neck.
Mookerjee et al.[20] (2023)	Retrospective	N=20	FACE-Q	**Improvements:** Satisfaction with Nose: (preoperative 36.4±13.0; postoperative 79.4±17.2). Satisfaction with Facial Appearance Overall: from 33.7±10.9 to 71.4±19.4. Psychological Function: from 39.3 ± 11.6 to 69.5±30.6). Social Function: from 32.2±20.2 to 73.7±22.8). Satisfaction with Decision: Postoperative score: 84.2±19.9.
Morrison et al.[23] (2020)	Prospective cohort	N=66	Adapted instrument for general facial aesthetic surgery	Facial feminization outcome scores improved after surgery, with a median preoperative score of 47.2 (IQR 38.9–55.6) rising to 75.0 (IQR 63.9–86.1) at 1 week to 1 month postoperative. At greater than 6 months follow-up, the median score further stabilized at 80.6 (IQR 66.7–83.3) Age was negatively associated with outcome scores (R = −0.390) and satisfaction (R = −0.49).
Daurade et al.[26] (2022)	Retrospective	N=21	Custom 8-item QoL survey assessing physical, social, and emotional impact.	100% positive responses to QoL survey; 81% rated outcomes as "very much improved" and 19% as "significantly improved." Patients reported increased self-esteem and confidence in social contexts.

Facial feminization surgery (FFS) has been consistently shown to improve the quality of life (QoL) for transgender women, as highlighted by various studies. In a prospective study using the SF-36v2 and a facial outcomes evaluation, QoL scores were substantially higher in transgender women who underwent FFS compared to those who did not, with mean scores of 76 and 44, respectively. Mental Component Summary (MCS) scores for individuals with FFS, gender reassignment surgery (GRS), or both were comparable to those of the general female population. In contrast, transgender women without surgical intervention had much lower mental health scores. These findings underscore FFS's potential mental health benefits[16].

A prospective cohort study demonstrated improvements in facial feminization outcome scores postoperatively. The median score increased from 47.2 preoperatively to 75.0 within 1 month and stabilized at 80.6 after six months. Patient satisfaction remained stable over time, though age influenced outcomes[23].

In a retrospective study assessing mandibular angle resection as part of FFS, all patients reported positive outcomes based on a custom 8-item QoL survey. Of these, 81% rated their results as "very much improved," while 19% rated them as "significantly improved." Enhanced self-esteem and confidence in social and professional contexts further demonstrated the procedure's impact on overall well-being[26].

Using the validated FACE-Q questionnaire, another prospective study evaluated 42 transgender women undergoing frontal-orbital feminization surgery. Notable improvements were noted in overall facial appearance (+36.5 points), forehead

ISSN 1808-5210 (Online)
ISSN 1679-5458 (Linking)

and eyebrow appearance (+41.8 points), wrinkles between eyebrows (+28.5 points), and reduced psychological distress (-33.5 points). Postoperatively, 67.6% of patients were satisfied with their overall results, and the recovery process was rated positively (81.2/100). Despite the overwhelmingly positive outcomes, some adverse effects, such as discomfort in the forehead and eyebrows (mean score: 39.3/100), were noted. Only one (3%) patient expressed regret about the procedure, and three (9%) patients avoided intimacy postoperatively[18].

Regarding deep plane facelift as a standalone procedure for FFS, substantial improvements were reported across all domains measured by validated scales. The Satisfaction with Life Scale (SWLS) increased from 20.8 ± 6.2 to 31.3 ± 3.7 postoperatively, and the Subjective Happiness Scale (SHS) improved from 13.15 ± 4.7 to 26.2 ± 1.5. Additional enhancements were observed in satisfaction with cheeks, jawline, and neck, as well as reductions in psychosocial distress[19].

Frontal eminence milling combined with hairline advancement was also evaluated in 48 transgender women. While the complication rate was 10%, minor issues such as cement-linked infection (2.1%), unsightly scars (6.3%), and frontal eminence asymmetry (2.1%) were resolved through revision surgery, supporting the safety and effectiveness of the procedure[17].

Finally, a retrospective analysis of feminization rhinoplasty, often combined with forehead contouring, highlighted its transformative impact. No major complications were reported, and only one patient (5%) required revision surgery. QoL assessments using the FACE-Q questionnaire showed substantial improvements across domains, including satisfaction with the nose (+43 points), facial appearance (+37.7 points), psychological function (+30.2 points), and social function (+41.5 points). Postoperative satisfaction with the decision to undergo surgery was rated highly at 84.2/100, reflecting the procedure's positive impact on emotional well-being and self-perception[20].

DISCUSSION

1. COMPLICATIONS IN FACIAL GANDER AFFIRMING SURGERY

Complications associated with FGAS are generally rare and manageable, as evidenced by multiple studies. One study reported an overall complication rate of 3.9%, with surgical site infections as the most common issue, and no relevant associations were found between complications and predisposing factors[27].

One study reported hypertrophic scarring and orbital hematomas as the most frequent, although rare, complications and highlighted the need for meticulous surgical planning and the safety of combining multiple interventions in a single session[23].

The importance of perioperative care has been highlighted, noting that minor wound complications were common (14.9%) but manageable with conservative treatments, while severe complications were rare.

Studies have emphasized the role of patient-specific factors in complication rates, with higher BMI being associated with increased risks, underscoring the importance of preoperative assessment and patient optimization[25-27]. The overall safety of FFS has been demonstrated, with a complication rate of 9.1% across 88 operative sessions:. Low complication rates were reported in patients undergoing frontal eminence milling and hairline advancement[17] and in deep plane facelifts.

2. QUALITY OF LIFE AND MENTAL HEALTH OUTCOMES

FGAS has a profound impact on the psychological and social well-being of transgender individuals. Transgender women who underwent FFS reported higher quality of life (QoL) scores compared to those who had not[16]. These findings align with documented stable improvements in facial feminization outcome scores over a six-month follow-up period, with variables such as age and smoking history influencing outcomes and highlighting the need for personalized surgical planning[23].

Great improvements in satisfaction with facial appearance, forehead aesthetics, and reduced psychological distress post-surgery were documented using the validated FACE-Q questionnaire[18]. Similarly, enhanced satisfaction in areas such as the cheeks, jawline, and neck has been reported, supported by validated tools like the Satisfaction with Life Scale (SWLS) and Subjective Happiness Scale (SHS)[19]. High satisfaction rates were also demonstrated, with 67.2% of patients perceiving their outcomes as "very much" or "completely" feminine[17].

The transformative impact of feminization rhinoplasty was highlighted, with considerable improvements in satisfaction with the nose, overall facial appearance, and psychological function[20]. Collectively, these studies underscore the role of FFS in enhancing self-esteem, social integration, and overall quality of life.

3. FUTURE DIRECTIONS

Facial gender affirming surgery is attracting growing interest in the field of facial aesthetic surgery, as revealed by the number of recently published papers about this issue. Despite the promising results, challenges remain in the field of FGAS. Standardizing complication reporting and using validated QoL assessment tools are crucial for advancing research and clinical practices. Technological advancements, such as virtual 3D surgical planning, can enhance preoperative counseling and help set realistic expectations[4,30,31]. Additionally, long-term studies are needed to evaluate the sustainability of surgical outcomes and address factors influencing satisfaction, such as age, BMI, and lifestyle habits.

FFS is not merely a cosmetic intervention but a critical component of gender-affirming care, with the potential to improve the physical and psychological well-being of transgender individuals. By addressing aesthetic and functional aspects, FFS enables patients to achieve congruence between their gender identity and physical appearance, fostering a better quality of life and social integration.

Facial Gender Affirmation Surgery is not only a clinically safe and effective intervention for improving mental health and quality of life among transgender and non-binary individuals, but it is also increasingly recognized as a fundamental human right. Access to gender-affirming procedures aligns with international principles of health equity, bodily autonomy, and the right to live free from discrimination. For many trans individuals, FGAS plays a critical role in alleviating gender dysphoria, enhancing social integration, and promoting psychological well-being. Therefore, its availability should be understood not merely as a matter of elective medical care, but as an essential component of comprehensive and respectful transgender healthcare.

4. LIMITATIONS

This review is subject to certain limitations. First, including studies with diverse methodologies, including retrospective designs, introduces variability in data collection and reporting standards, which may impact the comparability of results. Second, the lack of uniformity in quality-of-life assessment tools across studies, with some relying on non-validated or custom instruments, limits the generalization of findings. Third, the absence of long-term follow-up in many studies restricts our understanding of the sustainability of outcomes and the potential for delayed complications. Finally, publication bias cannot be excluded, as studies reporting positive outcomes may be overrepresented in the literature.

CONCLUSION

Access to facial gender affirmation surgery is a right of transgender persons. It represents a transformative intervention for transgender individuals, aligning facial features with gender identity and enhancing the quality of life. The findings of this systematic review demonstrate that while complications are generally rare and manageable, careful preoperative planning, precise surgical execution, and diligent postoperative care are essential to minimize risks. FGAS has consistently shown profound improvements in self-esteem, mental health, and social integration, affirming its role as a cornerstone of gender-affirming care. To advance the field, future research should prioritize standardizing quality-of-life assessment tools, rigorous reporting of complications, and exploring long-term outcomes. The reviewed literature supports the need for future research employing standardized methodologies, validated instruments, and extended follow-up periods to assess better the safety of facial gender affirmation surgeries.

REFERENCES

1. Capitán L, Simon D, Kaye K, et al. Facial Feminization Surgery. Plast Reconstr Surg 2014;134(4):609–619; doi: 10.1097/PRS.0000000000000545.
2. Patel NN, Gulati A, Knott PD, et al. Facial masculinization surgery. Oper Tech Otolaryngol Neck Surg 2023;34(1):69–73; doi: 10.1016/j.otot.2023.01.011.
3. Spiegel JH. Facial determinants of female gender and feminizing forehead cranioplasty. Laryngoscope 2011;121(2):250–261; doi: 10.1002/lary.21187.
4. Rosales O, Sejdiu Z, Camacho JM, et al. Facial feminization procedures and its impact on quality of life: A mini review. Heal Sci Rev 2023;7(January):100091; doi: 10.1016/j.hsr.2023.100091.
5. Deschamps-Braly JC. Facial Gender Confirmation Surgery. Clin Plast Surg 2018;45(3):323–331; doi: 10.1016/j.cps.2018.03.005.
6. Pokrowiecki R, Šufliarsky B, Jagielak M. Feminization Surgery of the Upper Face as the Crucial Factor in Gender Confirmation - Pearls and Pitfalls. Medicina (B Aires) 2024;60(1):120; doi: 10.3390/medicina60010120.
7. Lee JC, Pfaff MJ, Lee JC. Discussion:

ISSN 1808-5210 (Online)
ISSN 1679-5458 (Linking)

Prospective Quality-of-Life Outcomes after Facial Feminization Surgery: An International Multicenter Study. Plast Reconstr Surg 2020;145(6):1510–1511; doi: 10.1097/PRS.0000000000006870.

8. Tirrell AR, Abu El Hawa AA, Bekeny JC, et al. Facial Feminization Surgery: A Systematic Review of Perioperative Surgical Planning and Outcomes. Plast Reconstr Surg - Glob Open 2022;10(3):e4210; doi: 10.1097/GOX.0000000000004210.
9. Pittman TA, Economides JM. Preparing for Facial Feminization Surgery. Facial Plast Surg Clin North Am 2019;27(2):191–197; doi: 10.1016/j.fsc.2018.12.002.
10. Raffaini M, Perello R, Tremolada C, et al. Evolution of Full Facial Feminization Surgery: Creating the Gendered Face With an All-in-one Procedure. J Craniofac Surg 2019;30(5):1419–1424; doi: 10.1097/SCS.0000000000005221.
11. Regan A, Kent S, Morrison R. Facial feminisation surgery in NHS Scotland. Br J Oral Maxillofac Surg 2021;59(10):1209–1213; doi: 10.1016/j.bjoms.2021.04.005.
12. Lam K, Ho T, Yao WC. Sinocutaneous Fistula Formation After Forehead Recontouring Surgery for Transgender Patients. J Craniofac Surg 2017;28(3):e274–e277; doi: 10.1097/SCS.0000000000003524.
13. Bae JM. A suggestion for quality assessment in systematic reviews of observational studies in nutritional epidemiology. Epidemiol Health 2016;38:e2016014; doi: 10.4178/epih.e2016014.
14. Liberati A, Altman DG, Tetzlaff J, et al. The PRISMA Statement for Reporting Systematic Reviews and Meta-Analyses of Studies That Evaluate Health Care Interventions: Explanation and Elaboration. PLoS Med 2009;6(7):e1000100; doi: 10.1371/journal.pmed.1000100.
15. Page MJ, McKenzie JE, Bossuyt PM, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71; doi: 10.1136/bmj.n71.
16. Ainsworth TA, Spiegel JH. Quality of life of individuals with and without facial feminization surgery or gender reassignment surgery. Qual Life Res 2010;19(7):1019–1024; doi: 10.1007/s11136-010-9668-7.
17. Perrillat A, Coiante E, SidAhmed M, et al. Conservative approach to facial upper third feminisation: a retrospective study. J Cranio-Maxillofacial Surg 2023;51(2):98–106; doi: 10.1016/j.jcms.2023.01.020.
18. Schmidt M, Ramelli E, Atlan M, et al. FACE-Q satisfaction following upper third facial gender-affirming surgery using custom bone-section guides. Int J Oral Maxillofac Surg 2023;52(6):696–702; doi: 10.1016/j.ijom.2022.11.007.
19. La Padula S, Coiante E, Beneduce N, et al. Assessment of deep plane facelift in facial feminization surgery: A prospective pilot study. J Plast Reconstr Aesthetic Surg 2023;85:425–435; doi: 10.1016/j.bjps.2023.07.023.
20. Mookerjee VG, Alper DP, Almeida MN, et al. Quantitative Analysis of Morphometric Changes in Feminization Rhinoplasty Utilizing a Standardized Forehead-Rhinoplasty Technique. Aesthetic Surg J Open Forum 2023;5(0):1–9; doi: 10.1093/asjof/ojad095.
21. Nguyen N, Doan L, Jiang F, et al. Ambulatory facial feminization surgery: a comparative analysis of outcomes and complications. J Plast Reconstr Aesthetic Surg 2024;93:30–35; doi: 10.1016/j.bjps.2024.03.017.
22. Gupta N, Wulu J, Spiegel JH. Safety of Combined Facial Plastic Procedures Affecting Multiple Planes in a Single Setting in Facial Feminization for Transgender Patients. Aesthetic Plast Surg 2019;43(4):993–999; doi: 10.1007/s00266-019-01395-5.
23. Morrison SD, Capitán-Cañadas F, Sánchez-García A, et al. Prospective Quality-of-Life Outcomes after Facial Feminization Surgery: An International Multicenter Study. Plast Reconstr Surg 2020;145(6):1499–1509; doi: 10.1097/PRS.0000000000006837.
24. Chou DW, Tejani N, Kleinberger A, et al. Initial Facial Feminization Surgery Experience in a Multicenter Integrated Health Care System. Otolaryngol Neck Surg 2020;163(4):737–742; doi: 10.1177/0194599820924635.
25. Chaya BF, Boczar D, Rodriguez Colon R, et al. Comparative Outcomes of Partial and Full Facial Feminization Surgery: A Retrospective Cohort Study. J Craniofac Surg 2021;32(7):2397–2400; doi: 10.1097/SCS.0000000000007873.
26. Daurade M, Brosset S, Chauvel-Picard J, et al. Trans-oral versus cervico-facial lift approach

for mandibular angle resection in facial feminization: A retrospective study. J Stomatol Oral Maxillofac Surg 2022;123(2):257–261; doi: 10.1016/j.jormas.2021.03.006.

27. Murphy AI, Asadourian PA, Marano AA, et al. Patients and Procedures of Facial Gender Confirmation Surgery: A NSQIP Study. J Craniofac Surg 2022;33(1):298–302; doi: 10.1097/SCS.0000000000008180.

28. Hazkour N, Palacios J, Lu W, et al. Multiprocedural Facial Feminization Surgery: A Review of Complications in a Cohort of 31 Patients. J Craniofac Surg 2022;33(8):2502–2506; doi: 10.1097/SCS.0000000000008760.

29. Salesky M, Zebolsky AL, Benjamin T, et al. Gender-Affirming Facial Surgery: Experiences and Outcomes at an Academic Center. Facial Plast Surg Aesthetic Med 2022;24(1):54–59; doi: 10.1089/fpsam.2021.0060.

30. Pokrowiecki R, Šufliarsky B, Jagielak M. Esthetic Surgery of the Chin in Cis- and Transgender Patients—Application of T-Genioplasty vs. Single-Piece Segment Lateralization. Medicina (B Aires) 2024;60(1):139; doi: 10.3390/medicina60010139.

31. Taskov C. 3D Sliding Genioplasty and Its Role in Facial Feminization Surgery. Otolaryngol Clin North Am 2022;55(4):849–858; doi: 10.1016/j.otc.2022.04.008.

ISSN 1808-5210 (Online)
ISSN 1679-5458 (Linking)