



Enhancing patient education in breast surgery: artificial intelligence-powered guidance for mastopexy, augmentation, reduction, and reconstruction

Gianluca Marcaccini^{1^}, Pietro Susini¹, Yi Xie², Roberto Cuomo¹, Mirco Pozzi¹, Luca Grimaldi¹, Warren M. Rozen², Ishith Seth²

¹Unit of Plastic and Reconstructive Surgery, Department of Medicine, Surgery and Neuroscience, University of Siena, Siena, Italy; ²Department of Plastic and Reconstructive Surgery, Peninsula Health, Melbourne, Victoria, Australia

Contributions: (I) Conception and design: G Marcaccini, I Seth; (II) Administrative support: I Seth, WM Rozen; (III) Provision of study materials or patients: None; (IV) Collection and assembly of data: G Marcaccini, M Pozzi, Y Xie; (V) Data analysis and interpretation: I Seth, G Marcaccini, R Cuomo; (VI) Manuscript writing: All authors; (VII) Final approval of manuscript: All authors.

Correspondence to: Gianluca Marcaccini, MD. Unit of Plastic and Reconstructive Surgery, Department of Medicine, Surgery and Neuroscience, University of Siena, Policlinico le Scotte, Via Bracci 16, 53100 Siena (SI), Italy. Email: gianlu32@gmail.com.

Background: Large language models (LLMs), such as ChatGPT have revolutionised patient education by offering accessible, reasonable, and empathetic guidance. This study evaluates ChatGPT's role in supporting patient inquiries regarding four key plastic surgery procedures: mastopexy, breast augmentation, breast reduction, and breast reconstruction. The study highlights its potential as a supplemental tool in patient education by assessing its performance across relevance, accuracy, clarity, and empathy criteria.

Methods: The study collected frequently asked questions from patients about the selected procedures during pre- and post-operative consultations. Responses were generated by ChatGPT and evaluated by a panel of Plastic Surgery experts. Scores from 1 to 5 were assigned to four criteria: relevance, accuracy, clarity, and empathy. Statistical analyses, including means, standard deviations, and Kruskal-Wallis tests, were conducted to evaluate differences in the scores assigned to responses across criteria and procedures.

Results: ChatGPT demonstrated high performance across all evaluation criteria, with clarity emerging as the strongest attribute, reflecting the model's ability to simplify complex medical concepts effectively. Accuracy, while slightly lower, remained reliable, aligning well with medical standards. Among the procedures, breast reconstruction appeared to perform particularly well, followed closely by mastopexy and breast augmentation. The analysis revealed no significant differences across the criteria, indicating consistent performance.

Conclusions: ChatGPT demonstrated remarkable capability in addressing patient concerns and offering clear, empathetic, and relevant responses. However, limitations include the lack of personalised advice and potential patient misinterpretations, emphasising the need for professional oversight. ChatGPT is a valuable adjunct to professional medical consultations, enhancing patient education and engagement. Future research should focus on improving personalisation and evaluating its real-world application in clinical settings.

Keywords: ChatGPT; artificial intelligence (AI); plastic surgery; breast surgery; communication

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[^] ORCID: 0000-0002-8396-095X.

Introduction

In the field of plastic surgery, breast procedures represent a significant and transformative chapter for many patients, encompassing a wide range of interventions such as mastopexy, breast augmentation, breast reduction, and breast reconstruction. These procedures promise not only aesthetic improvements but also functional and emotional benefits for patients addressing issues such as sagging tissues, asymmetry, or the need for post-mastectomy reconstruction. However, alongside the promise of transformation, patients often face numerous questions and concerns about the peri-operative journey, driven by fear of the unknown and the desire for precise and accurate information about what to expect (1,2).

Since the introduction of ChatGPT by OpenAI in November 2022, interest in the application of artificial intelligence (AI) in medicine has grown exponentially (3-5). As a large language model (LLM), ChatGPT employs natural language processing technology to generate coherent and contextually relevant text based on user input (6). Its ability to analyse vast amounts of medical literature and patient data within seconds holds immense potential for improving accuracy and efficiency in treatment planning and patient education. Consequently, ChatGPT has been explored as a tool to assist in diagnosis, treatment, research, and triage (7-9).

This rapid evolution in information technology, machine learning, and AI is set to revolutionise medical education and clinical management. In plastic surgery, such advancements promise to refine patient-specific inquiries, optimise surgical planning, and enhance post-operative care (10,11).

Recognising the critical need to support patients with reliable information during the peri-operative period, this article evaluates the effectiveness of the latest version of ChatGPT, an advanced LLM, in addressing patient concerns related to breast surgery. With its ability to engage in nuanced conversational exchanges, the newest version of ChatGPT holds the potential to improve doctor-patient communication if adequately integrated into clinical practice. By offering immediate and general evidence-based guidance, it positions itself as a valuable resource for addressing common patient concerns, although it cannot provide personalised recommendations tailored to individual cases (12-14).

Through the possible analysis of patient interactions with the latest version of ChatGPT, this study assesses the accuracy, relevance, and impact of its responses to specific concerns related to mastopexy, breast reduction, breast augmentation, and breast reconstruction. The objectives are twofold: to determine the efficacy of the latest version of ChatGPT as a pre-operative support tool for patients considering breast surgery and to identify areas for further improvement to optimise patient communication and preparation. In an era marked by the integration of technology and medicine, this article highlights the critical role, challenges, and future potential of AI tools in enriching the surgical journey for patients, particularly in breast procedures, emphasising their importance in the evolving healthcare landscape (3,15,16) (*Figure 1*).

Highlight box

Key findings

- ChatGPT effectively answers patient questions about breast surgery procedures.
- Clarity emerged as its strongest attribute, followed by accuracy, relevance, and empathy.
- Performance was consistent across different procedures, with breast reconstruction scoring slightly higher.
- ChatGPT is a reliable tool for patient education, improving understanding and reducing anxiety.

What is known and what is new?

- Artificial intelligence tools enhance patient communication and information accessibility.
- ChatGPT provides clear and empathetic responses in plastic surgery but lacks personalization and real-time updates.

What is the implication, and what should change now?

- ChatGPT supports medical counseling by addressing common patient concerns.
- Future improvements should focus on personalization and real-time data integration, with clinical oversight ensuring accurate guidance.

Methods

This prospective observational study is designed to evaluate the performance of ChatGPT, an LLM developed by OpenAI, in addressing frequently asked questions (FAQs) related to four key breast surgery procedures. The study followed ethical standards and guidelines, ensuring robust data collection and analysis while maintaining patient confidentiality.

Question collection

The first step of this study involved the systematic collection of questions and concerns raised by patients during the

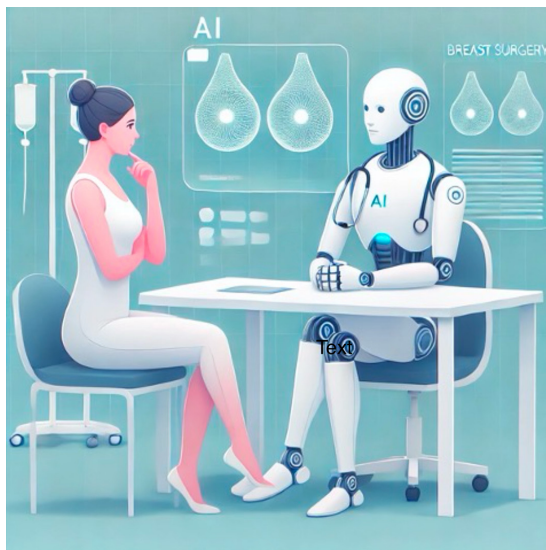


Figure 1 This figure shows artificial intelligence, in the role of a physician, conversing with a patient. Image generated with ChatGPT.

pre- and postoperative phases of breast surgery. This included procedures such as mastopexy, breast reduction, breast augmentation, and breast reconstruction. Data was collected in clinics specialising in plastic and reconstructive breast surgery, using direct patient interviews and reviews of their medical records. The questions represent the most frequently asked concerns by patients undergoing these procedures, ensuring their practical relevance. Surgeons and nursing staff collaborated, documenting all patient inquiries during pre-operative consultations and immediate post-operative follow-ups. This approach comprehensively represented the concerns typically encountered in breast surgery. Frequently asked patient questions were collected from direct patient interviews, reviews of medical records, and common concerns documented during pre- and postoperative consultations. Inclusion criteria required that questions address specific aspects of breast surgery, such as surgical techniques, recovery, risks, and expected outcomes, ensuring relevance and practical application for patient education (Tables 1-4).

Question categorization

The collected questions were grouped into key themes: surgical outcomes, pain management, post-operative recovery, scarring, risks, and long-term maintenance strategies. This categorisation was essential to structure the questions systematically and organise their presentation in

the study, ensuring clarity in the subsequent analysis and evaluation.

Interaction with the latest version of ChatGPT

After categorisation, the questions were presented to the latest version of ChatGPT at that time. For this study, we utilised ChatGPT-4, available exclusively in the paid version (ChatGPT Plus), which offers enhanced accuracy, reasoning, and contextual understanding compared to ChatGPT-3.5, the model used in the free version. This ensures that the results reflect the performance of the most advanced model available during the study period. Each question was posed to the model in dialogue mode, simulating a realistic conversation between a patient and an AI-based virtual assistant. During these sessions, the responses generated by ChatGPT were carefully recorded, focusing on evaluating the relevance, accuracy, clarity, and emotional sensitivity of the information provided (Tables 1-4).

Response evaluation

The responses generated by ChatGPT were critically evaluated by a multidisciplinary team comprising three experienced plastic surgeons, one surgery-specialized nurse, and two patients who had previously undergone breast surgery. The surgeons and nurses primarily evaluated relevance, accuracy, and clarity based on medical standards, while patients focused on empathy and clarity from a non-specialist perspective. The evaluation criteria included the following dimensions:

- ❖ **Relevance:** assessed the pertinence of ChatGPT's responses to the specific questions, ensuring that the information provided directly applicable to the patient's concerns.
- ❖ **Accuracy:** verified the correctness of ChatGPT's answers against the most current medical and surgical knowledge, ensuring that the information was evidence-based and clinically sound.
- ❖ **Clarity:** measured the comprehensibility of the responses for individuals without a medical background, emphasising the ability to simplify complex medical concepts without compromising accuracy.
- ❖ **Empathy:** evaluated ChatGPT's capacity to address patient concerns with sensitivity, understanding, and acknowledgment of the emotional context of the inquiries.

Table 1 Mastopexy: pre- and post-operative questions and answers

Question	Response
How much experience do you have with mastopexy procedures?	It is essential to choose a surgeon with extensive experience in mastopexy, as this ensures expertise in reshaping and lifting the breasts for optimal aesthetic results
How is the mastopexy procedure performed?	Mastopexy involves removing excess skin, reshaping breast tissue, and repositioning the nipple and areola to create a firmer, more youthful breast contour
What results can I expect, and how long will they last?	The results typically improve breast shape and position, lasting several years. However, aging, gravity, and weight fluctuations can affect the long-term appearance
Will I need implants during the procedure?	Implants are not required for mastopexy but can be added if you desire increased volume. The decision depends on your goals and will be discussed during consultation
How visible will the scars be?	The scars depend on the technique used but are usually around the areola and vertically down to the breast fold. They are designed to fade over time and be discreet
When can I resume physical activity?	Light activities can usually be resumed after 2 weeks, while intense physical activity and heavy lifting should be avoided for 6–8 weeks
What are the risks and complications?	Risks include infection, changes in nipple sensation, asymmetry, and poor scar healing. Your surgeon will take all precautions to minimize these risks
How many days of hospitalization are expected?	Most mastopexy procedures are performed on an outpatient basis, but in some cases, a 1-day hospital stay might be recommended for monitoring
How long should I rest?	A rest period of at least 1–2 weeks is recommended. Most patients can resume desk work after this period but should avoid strenuous activities for 4–6 weeks
For how many days should I wear the compression garment?	The compression garment should be worn for 4–6 weeks to support the healing process and reduce swelling
Will I lose nipple sensation?	Temporary changes in nipple sensation are common but typically improve over time. Permanent loss of sensation is rare but a possible risk of the procedure
Can I breastfeed after mastopexy?	Breastfeeding is often still possible after mastopexy, but it depends on the technique used and your individual anatomy. This should be discussed with your surgeon
When can I see the final results?	Initial results are visible immediately, but swelling may obscure the final appearance, which typically takes 3–6 months to fully develop

Each response was scored on a scale from 1 to 5 for each criterion, where 1 indicated a subpar reaction, and 5 denoted exemplary performance. To distinguish between scores, a response scoring three was considered adequate but lacking in either detail, accuracy, or clarity, addressing the question partially or with minor omissions. A score of 4 indicated an accurate and relevant response but could benefit from additional nuance or examples to enhance understanding. This scoring system provided a structured and nuanced assessment of ChatGPT's effectiveness in addressing patient concerns related to breast surgery (3) (*Table 5*).

Statistical analysis

We analysed the scores assigned from 1 to 5 to the evaluation criteria (relevance, accuracy, clarity, and empathy) to test

the hypothesis and examine patterns within the data. Means and standard deviations were calculated for each criterion, and the distribution of scores was analysed. Additionally, the non-parametric Kruskal-Wallis test was used to compare scores across the four evaluation criteria (relevance, accuracy, clarity, and empathy) and identify significant differences. The Kruskal-Wallis test was employed for its suitability for non-normally distributed data, as determined through preliminary normality testing (e.g., Shapiro-Wilk test). While analysis of variance (ANOVA) is traditionally used for comparing means across groups when the normality assumption is met, the Kruskal-Wallis test was preferred given the ordinal nature of the scoring system. Future studies may consider advanced statistical approaches to validate these findings further. This process ensured the validity and precision of the results obtained (*Tables 6,7*).

Table 2 Breast augmentation: pre- and post-operative questions and answers

Question	Response
How much experience do you have with breast augmentation procedures?	It is important to choose a surgeon with extensive experience in breast augmentation to ensure optimal results and minimize risks
What types of implants are available?	There are silicone gel and saline implants, as well as options for implant shape (round or anatomical) and surface texture (smooth or textured). Your surgeon will help determine the best choice for your goals and anatomy
How is the breast augmentation procedure performed?	The procedure involves inserting implants through an incision, which may be placed under the breast fold, around the areola, or in the armpit, depending on your anatomy and preferences
Will the implants look natural?	When chosen appropriately for your body type and goals, implants can achieve a very natural appearance. Your surgeon will guide you to the best option
What results can I expect, and how long will they last?	Breast augmentation results are long-lasting, but implants may need replacement over time due to aging, lifestyle changes, or implant wear
What is the recovery process like?	Recovery typically takes about 1–2 weeks for light activities, but strenuous activities and heavy lifting should be avoided for 4–6 weeks
What are the risks and complications?	Risks include infection, capsular contracture, implant rupture, asymmetry, and changes in nipple sensation. Your surgeon will discuss these risks with you in detail
Will I lose nipple sensation?	Temporary changes in nipple sensation are common but typically improve over time. Permanent loss is rare but a possible risk
Can I breastfeed after breast augmentation?	Most patients can breastfeed after breast augmentation, but there may be some limitations depending on the surgical approach and implant placement
How visible will the scars be?	Scars are placed in discreet locations, such as under the breast fold, and typically fade over time to become less noticeable
When can I resume physical activity?	Light activities can usually be resumed after 1–2 weeks, but high-impact exercises should be avoided for at least 4–6 weeks
How often do implants need to be replaced?	Modern implants are designed to last many years, but they may need replacement after 10–15 years or in the event of complications such as rupture or capsular contracture
When can I see the final results?	Initial results are visible immediately, but swelling may obscure the final appearance, which typically takes 3–6 months to fully settle

Results

An analysis of the scores assigned to ChatGPT's responses for the four evaluation criteria (relevance, accuracy, clarity, and empathy) showed average values ranging from 4.70 to 4.90 (Tables 5–7). As reported in Table 5, mastopexy scored 4.80 for relevance, 4.70 for accuracy, 4.80 for clarity, and 4.70 for empathy. Breast augmentation showed values of 4.70, 4.80, 4.90, and 4.80, respectively, while breast reduction reached 4.70, 4.70, 4.80, and 4.70. Breast reconstruction obtained values of 4.80 for relevance, 4.80 for accuracy, 4.90 for clarity, and 4.80 for empathy.

Overall averages for the four criteria (Table 6) indicate that clarity achieved the highest mean score (4.85 ± 0.06), whereas relevance, accuracy, and empathy each averaged

4.75 ± 0.06 . The Kruskal-Wallis test (test statistic 5.76; $P=0.12$), shown in Table 7, revealed no statistically significant differences among the criteria or among the different procedure groups, suggesting a generally uniform performance by the model. Nonetheless, clarity demonstrates a slight advantage over the other dimensions, with particularly high values observed in breast augmentation and breast reconstruction procedures (4.90).

In summary, the data indicate that ChatGPT provides responses with consistently high scores in terms of information pertinence (relevance), alignment with clinical standards (accuracy), ease of comprehension (clarity), and sensitivity to patient concerns (empathy). No significant differences were found across the four surgical procedures examined.

Table 3 Breast reduction: pre- and post-operative questions and answers

Question	Response
How much experience do you have with breast reduction procedures?	Choosing a surgeon with extensive experience in breast reduction ensures the best possible outcomes in terms of aesthetics and relief from physical discomfort
Who is a good candidate for breast reduction surgery?	Patients with excessively large breasts causing physical pain, discomfort, or self-consciousness are good candidates. A consultation will determine individual suitability
How is the breast reduction procedure performed?	The procedure involves removing excess breast tissue, fat, and skin, while reshaping the breasts and repositioning the nipple and areola for a natural appearance
Will my breasts look natural after surgery?	Yes, the goal is to create proportionate, natural-looking breasts while addressing physical discomfort caused by overly large breasts
What results can I expect, and how long will they last?	Results include smaller, lighter, and more proportionate breasts, along with relief from physical discomfort. Results are long-lasting but can be affected by aging and weight changes
What is the recovery process like?	Recovery typically takes 1–2 weeks for light activities, while full recovery may take 4–6 weeks. Swelling and mild discomfort are common initially
What are the risks and complications?	Risks include infection, changes in nipple sensation, asymmetry, and healing complications. Your surgeon will discuss these risks during consultation
How visible will the scars be?	Scars are typically located around the areola, vertically down to the breast fold, and sometimes along the fold. They fade over time but may remain visible
Can I breastfeed after breast reduction?	Breastfeeding may still be possible, but it depends on the amount of tissue removed and the surgical technique. This should be discussed with your surgeon
Will I lose nipple sensation?	Temporary changes in nipple sensation are common but often improve over time. Permanent loss of sensation is a rare but possible risk
When can I resume physical activity?	Light activities can usually be resumed after 2 weeks, but strenuous exercises and heavy lifting should be avoided for at least 4–6 weeks
How many days of hospitalization are expected?	Breast reduction is often performed as an outpatient procedure, but some cases may require a 1–2-day hospital stay for monitoring
When can I see the final results?	Initial results are visible immediately, but swelling and scar maturation typically take 3–6 months to fully settle

Discussion

LLM, such as ChatGPT, have demonstrated considerable potential in enhancing patient education and communication within the healthcare sector. Their ability to rapidly process vast amounts of data and generate coherent, contextually relevant responses has opened new avenues for patient engagement and shared decision-making. This study evaluates the role of ChatGPT in addressing common patient concerns in breast surgery procedures, including mastopexy, breast augmentation, breast reduction, and breast reconstruction. The findings reveal ChatGPT's ability to deliver high-quality responses with scores consistently above 4.7 across relevance, accuracy, clarity, and empathy, underscoring its effectiveness in improving doctor-patient interactions.

The results emphasise ChatGPT's strength in delivering clear and understandable information, reflected by the highest average score in clarity (4.85±0.06). Clarity remains a cornerstone of effective communication, particularly in plastic surgery, where patients must grasp complex medical terminology and surgical expectations to make informed decisions. This aligns with previous studies, such as those by Seth *et al.*, which highlight the importance of simplifying medical education and providing clear explanations to improve patient understanding and reduce pre-operative anxiety (4,5,17). For instance, Seth and colleagues demonstrated that generative AI tools significantly enhanced comprehension in surgical education, particularly in procedures requiring nuanced patient counselling, such as rhinoplasty and complex reconstructive surgeries (17-19). This consistency in findings reinforces the role of LLMs in

Table 4 Breast reconstruction: pre- and post-operative questions and answers

Question	Response
How much experience do you have with breast reconstruction procedures?	Selecting a surgeon with extensive experience in breast reconstruction ensures tailored solutions that address both aesthetic and functional needs
What is breast reconstruction surgery?	Breast reconstruction is a surgical procedure to restore the shape and appearance of the breast after mastectomy or lumpectomy, using implants or autologous tissue
What are the options for breast reconstruction?	The main options include implant-based reconstruction (heterologous) and autologous reconstruction using tissue from your body, such as the abdomen, back, or thighs
What is heterologous reconstruction?	Heterologous reconstruction involves using implants, either silicone or saline, to recreate the shape of the breast. It may be combined with additional procedures for symmetry
What is autologous reconstruction?	Autologous reconstruction uses tissue from your own body, such as the DIEP flap (abdomen) or latissimus dorsi flap (back), to create a natural breast shape
Which reconstruction option is best for me?	The choice depends on factors such as your body type, medical history, personal preferences, and whether you have had radiation therapy. This will be discussed during consultation
What results can I expect from breast reconstruction?	Breast reconstruction restores breast shape and volume, improving symmetry and confidence. However, it may not perfectly match the original breast in appearance or sensation
How long does the reconstruction process take?	Reconstruction can be performed immediately after mastectomy or delayed. It may require multiple procedures over several months to achieve the final results
Will I regain sensation in the reconstructed breast?	Reconstructed breasts typically have reduced or no sensation, but some nerve regeneration may occur over time, depending on the technique used
What are the risks and complications?	Risks include infection, implant rupture, tissue flap failure, asymmetry, and scarring. Your surgeon will discuss these risks in detail and take steps to minimize them
Can breast reconstruction interfere with cancer treatment?	Breast reconstruction is planned in coordination with your oncologist to ensure it does not interfere with cancer treatments, such as chemotherapy or radiation
How visible will the scars be?	Scars depend on the technique used but are usually placed in discreet locations. Over time, they fade but may remain visible to some degree
When can I resume physical activity?	Light activities can often be resumed within 2–4 weeks, but more strenuous activities should be avoided for 6–8 weeks or as advised by your surgeon
How long will the results last?	Implants may need replacement after 10–15 years, while autologous reconstruction is typically permanent. Aging and lifestyle factors can affect long-term outcomes
Can nipple reconstruction be included?	Yes, nipple reconstruction or 3D tattooing can be performed as part of the final stage of breast reconstruction to enhance the appearance of the breast
What is the recovery process like?	Recovery depends on the type of reconstruction. Implant-based recovery is quicker, typically 2–4 weeks, while autologous reconstruction may require 6–8 weeks or longer
Does insurance cover breast reconstruction?	In many countries, breast reconstruction is covered by health insurance as part of mastectomy recovery. Check with your provider for specific details

3D, three-dimensional; DIEP, deep inferior epigastric perforator.

bridging the knowledge gap between healthcare providers and patients.

All criteria demonstrated strong performance, with accuracy scoring slightly lower at 4.75 ± 0.06 . While this remains a high score, it underscores some limitations, such as the inability of ChatGPT to align with rapidly evolving medical guidelines and surgical advancements

fully. Plastic surgery is a dynamic specialty, with continuous innovation in surgical techniques, prosthetic technologies, and reconstructive methodologies. Previous research on AI applications in surgical education and intraoperative guidance also identified this limitation, emphasising continuous data integration and real-time updates to improve accuracy and relevance in clinical applications

Table 5 Scores by procedure

Criterion	Mastopexy	Breast augmentation	Breast reduction	Breast reconstruction
Relevance	4.80	4.70	4.70	4.80
Accuracy	4.70	4.80	4.70	4.80
Clarity	4.80	4.90	4.80	4.90
Empathy	4.70	4.80	4.70	4.80

Table 6 Statistics by criterion

Criterion	Mean	Standard deviation
Relevance	4.75	0.06
Accuracy	4.75	0.06
Clarity	4.85	0.06
Empathy	4.75	0.06

Table 7 Kruskal-Wallis test

Statistic	P value
5.76	0.12

(5,11-17,20). As such, while ChatGPT's responses demonstrated a robust foundation in evidence-based knowledge, the lack of real-time adaptability restricts its ability to address nuanced, procedure-specific queries effectively.

Performance variations across the evaluated procedures provide further insights into the model's capabilities and limitations. ChatGPT achieved the highest scores for mastopexy and breast augmentation, reflecting its proficiency in addressing concerns related to these relatively standardised procedures. Queries regarding surgical techniques, scarring, and post-operative recovery timelines were answered comprehensively, enabling patients to understand their treatment journey better. Similarly, breast reconstruction achieved a slightly lower score (4.83 ± 0.07), which can be attributed to the complexity of reconstructive options, including autologous flaps and implant-based techniques. Breast reconstruction, particularly following oncologic interventions, involves higher emotional stakes and more significant variability in surgical outcomes. Studies by Seth *et al.* have previously shown that AI-based educational tools need to account for the psychosocial aspects of patient care, particularly in reconstructive

surgery, where empathy and personalisation are paramount for patient satisfaction and confidence (10,12,17,21).

The lowest performance was observed in breast reduction (4.73 ± 0.06), suggesting that while ChatGPT is proficient in delivering generalisable information, it may lack the depth required to address macromastia management's functional and aesthetic nuances. Questions surrounding physical discomfort, scarring, and long-term outcomes often require highly personalised responses, which current LLMs cannot provide. This aligns with the findings by Seth *et al.* (5), who demonstrated that individualised surgical counselling remains a critical component of patient satisfaction, and highlights the inherent limitations of AI tools in offering tailored guidance (22-25).

The clinical implications of these findings are substantial. ChatGPT's ability to deliver clear, relevant, and empathetic responses significantly benefits patient preparedness, education, and engagement. Effective pre-operative education has been shown to reduce patient anxiety, improve compliance with post-operative instructions, and enhance overall satisfaction with surgical outcomes (20,21,26). ChatGPT, by providing 24/7 availability, addresses a standard limitation in traditional medical consultations: limited time for comprehensive discussions. This accessibility is particularly relevant for patients in rural or underserved areas who may face barriers to frequent follow-ups. Seth *et al.*'s work in AI-assisted telemedicine further supports this, demonstrating that generative AI can enhance access to care by supplementing professional consultations with high-quality, standardized information (5,17). Bias in ChatGPT's responses may arise from its reliance on pre-existing datasets, leading to gaps in the latest clinical advancements and personalized recommendations. Continuous updates, real-time integration of new data, and clinician oversight are essential to mitigate these limitations (4,5,27-29).

Nevertheless, the limitations identified in this study highlight the need for professional oversight and

integration of ChatGPT as a complementary tool rather than a standalone resource. One major concern remains the need for more personalization in responses. While ChatGPT can provide general information, it cannot account for patient-specific factors, such as comorbidities, previous surgical history, and anatomical variability, which are integral to plastic surgery decision-making. Seth *et al.* emphasised balancing AI tools with clinical judgment to ensure safe, effective, and individualised patient care (10-17). Additionally, the risk of patient misinterpretation must be acknowledged, as reliance on generalised AI responses without professional clarification can lead to unrealistic expectations or misunderstandings about surgical risks and outcomes (28,30-33).

Another significant limitation is the latency in incorporating the latest medical advancements into LLMs (33-36). Plastic surgery continues to evolve rapidly, particularly in reconstructive microsurgery, minimally invasive procedures, and implant technology. ChatGPT's reliance on pre-existing training datasets limits its ability to reflect these innovations in real time. Previous studies have recommended integrating real-time data feeds and continuous updates to improve the accuracy and relevance of AI-based responses (24,27).

Conclusions

ChatGPT is a powerful tool for improving patient access to reliable and comprehensible medical information but should be viewed as a complement to professional medical advice. With future refinements, including integrating continuous human feedback mechanisms and improved personalisation, ChatGPT can further revolutionise patient education and support in plastic surgery. Future studies should focus on assessing its impact in practical, real-world contexts, fostering an optimal synergy between AI and patient care.

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Footnote

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