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Research Article

Experience with Registered Nurse First Assistants (RNFA) vs General Practitioner Surgical Assistants (GPSA) in Bilateral Breast Reduction

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Abstract

Introduction: In a community setting, a surgical assistant for breast reduction surgery will either be a Registered Nurse First Assistant (RNFA) or a General Physician Surgical Assistant (GPSA). The two groups of assistants are compared in this study. **Methods**: A retrospective review over a two-year period was performed and evaluated the surgical outcomes of 2 groups of 20 cases of breast reductions, one where the primary assistant was an RNFA and the other with a GPSA. Patient satisfaction was determined through a self-reporting survey beyond the six-month postoperative period, and a complication profile was noted for each patient. **Results:** Descriptive data for the GPSA group of 20 bilateral breast reductions and the data for the 20 bilateral breast reduction patients operated upon with an RNFA surgical assistant was gathered. The data was analyzed using a Student's t-test to compare the averages of different parameters in the two groups and determine if the differences between them were significant. The results were comparable in both groups with respect to age, size of bilateral breast reduction, body mass index (BMI) and other parameters. However, statistically significant differences ($p<.05$) were noted between the two groups for operative time and estimated blood loss, both of which were in favor of the RNFA group. **Conclusion:** A statistically significant difference in operative time and estimated blood loss were noted in the group of patients operated upon with the assistance of a Registered Nurse First Assistant (RNFA). A cost savings to Ontario's Ministry of Health and Long-Term Care (MOHLTC) was also realized by utilizing an RNFA over a GPSA. The cost-effectiveness of an RNFA, their comprehensive training, nursing background and flexibility make them a valuable asset to any plastic surgery team and should be considered by hospitals.

Keywords: Registered Nurse First Assistant (RNFA); General Physician Surgical Assistant (GPSA); Bilateral breast reduction; Outcomes; Complications; Surgical times; Blood loss

Introduction

Plastic surgery is a rapidly evolving surgical specialty which has seen significant advancements in recent years. As technology and surgical techniques continue to improve, the role of the surgical assistant has become increasingly important in ensuring the success of plastic surgery procedures [1]. Historically, the role of the surgical assistant in plastic surgery was limited to providing basic support services during surgical procedures. This included tasks such as sterilizing instruments, preparing the operating room and limited assistance to the surgeon during the procedure [2]. However, with the advent of new surgical techniques and more complex procedures, the role of the surgical assistant has expanded significantly [3].

One of the most significant ways in which the role of the surgical assistant has evolved is in the area of patient care. Surgical assistants are now responsible for many aspects of patient care, including pre-operative preparation and post-operative care. This includes tasks such as taking vital signs, monitoring patients during surgery, and administering medications as necessary. The surgical assistant also plays a critical role in ensuring patient safety, both during and after the surgical procedure [2,4].

There are two types of surgical assistants that are utilized in private and community-based plastic surgery practices. The first is the Registered Nurse First Assistant (RNFA) and the alternate is the General Physician Surgical Assistant (GPSA). Each of these well-trained surgical assistant groups play crucial roles and are in high demand given the growing volumes of plastic surgical cases [5]. However, there are no reviews or investigations that have assessed the relative merits of having a first assistant nurse (RNFA) compared to a first assistant General Physician (GPSA) to the plastic surgeon's outcomes. This study attempts to provide insights into this issue utilizing the bilateral breast reduction procedure, a commonly performed plastic surgery operation that often relies on surgical assistance.

Patients and Methods

Patients who satisfied requirements for bilateral breast reduction procedures over a 2-year period from January 1, 2019 to January 1, 2021 were included in this study. Cases that had liposuction as part of their procedure were excluded. All patients were seen in consultation and operated upon by the senior author (ME) and were stratified into 2 groups. Group 1 included those patients operated with the assistance of a General Physician Surgical Assistant (GPSA) and Group 2 involved those patients who underwent the same procedure with the Registered Nurse First Assistant (RNFA). Patient age, average body mass index, average weight of breast tissue removed from each breast, blood loss, pedicle type (superomedial vs inferior pedicle technique) were noted and time of operation was noted. Complications in these cases were tabulated, patient satisfaction with their results was determined through a self-reporting survey beyond the six-month postoperative period, and a complication profile was determined for each patient.

Results

Descriptive data for the GPSA group of 20 bilateral breast reductions is displayed in Table 1 and the data for the 20 bilateral breast reduction patients operated upon with an RNFA surgical assistant is shown in Table 2. The data was analysed using a

Student's t-test to compare the averages of different parameters in the two groups and determine if the differences between them were significant. The results were comparable in both groups with respect to age, size of bilateral breast reduction, body mass index (BMI) and other parameters (Figure 1). However, statistically significant differences ($p<.05$) were noted between the two groups for operative time (Figure 2) and estimated blood loss (Figure 3), both of which were in favour of the RNFA group. The cost effectiveness of the RNFA group vs the GPSA group is shown in Table 3.

GrouP 1 - GPSA

PT #	AGE	R (g)	L (g)	EBL (cc)	OR TIME (min)	PS	SSAT	PEDICLE	BMI	COMPLICATIONS
1	37	654	680	200	134	8	8	INF	31	WOUND INFECTION
2	29	334	310	190	121	9	7	SM	29	
3	43	432	425	180	111	8	7	INF	32	
4	45	289	294	145	143	9	7	SM	24	
5	36	734	820	300	154	8	8	INF	34	OPENING AT T JUNCTION
6	24	578	590	200	125	8	8	INF	28	
7	28	389	376	150	111	7	8	SM	26	
8	47	436	440	140	128	8	8	INF	29	
9	52	516	523	130	132	8	8	INF	25	
10	44	489	499	150	131	8	8	INF	30	
11	53	572	535	140	129	9	8	INF	28	MILD ASYMMETRY
12	34	434	502	120	123	8	8	INF	33	
13	27	278	266	130	121	9	8	SM	24	
14	37	421	409	100	135	9	8	INF	29	
15	39	332	356	100	128	8	8	SM	24	
16	25	488	510	120	133	8	9	INF	28	
17	41	320	310	100	120	8	8	SM	26	
18	35	290	295	90	122	8	8	SM	27	THICK SCAR
19	44	654	678	180	134	8	8	INF	31	
20	53	234	255	120	129	8	8	INF	27	
Mean	38.65	443.7	453.65	149.25	128.2	8.2	7.9		28.25	

Table 1: Data From 20 Bilateral Breast Reduction Patients Operated on with a General Physician Surgical Assistant (Gpsa).

PT #	AGE	R (g)	L (g)	EBL (cc)	OR TIME (min)	PS	SSAT	PEDICLE	BMI	COMPLICATIONS
1	37	436	522	129	93	9	9	INF	28	
2	43	587	540	90	110	9	9	INF	26	
3	47	376	395	70	87	10	9	SM	30	STITCH ABSCESS
4	28	602	623	175	96	8	9	INF	33	
5	38	257	284	110	83	10	8	SM	23	

6	54	543	556	120	96	8	9	INF	26	
7	49	672	690	200	114	9	8	INF	28	OPENING AT T JUNCTION
8	22	434	422	110	92	8	9	SM	25	
9	36	322	340	80	88	9	9	SM	30	
10	44	443	440	120	72	9	9	SM	29	
11	43	278	286	100	91	9	9	SM	23	
12	35	345	356	100	87	9	9	INF	26	WIDE SCAR
13	44	487	265	120	93	9	9	INF	30	
14	47	535	521	130	89	9	9	INF	31	
15	26	265	240	100	84	9	9	SM	22	
16	20	590	605	110	96	9	9	INF	28	
17	21	690	678	120	98	9	9	INF	33	
18	33	412	430	110	85	9	9	SM	29	A R E O L A R ASYMMETRY
19	29	754	780	140	101	9	9	INF	30	
20	45	405	409	90	90	9	9	INF	27	
Mean	37.05	471.65	469.1	116.2	92.25	8.95	8.9		27.85	

Table 2: Data From 20 Bilateral Breast Reduction Patients Operated on With an Rn First Assistant (Rnfa).

Discussion

The role of the surgical assistant in plastic surgery has evolved over the past several decades and in many centers represents an integral part of the plastic surgical team.6 In teaching institutions, this role is fulfilled by various levels of trainee residents and/or fellows. In community hospitals and private practice, the role is commonly filled by a GPSA or RNFA [7].

The surgical assistant is a qualified medical professional who aids the primary surgeon during the surgical procedure and that role will vary based upon the complexity of the surgery, the surgeon's preference and comfort level with the skill of the assistant and the specific needs of the patient. Some surgical assistants have a very high level of skill and experience and will have had extensive experience in a particular surgical procedure while others may function more as a general surgical assistant. The level of experience will impact their ability to assist effectively during the procedure [3,8].

Breast Reduction surgery was chosen as the focus of this study because it is a bilateral procedure which can benefit from a skilled assistant. Having a skilled surgical assistant helps improve the efficiency of the surgery in that they can handle tasks such as tissue retraction, suture management, and wound care, allowing the primary surgeon to focus on the main aspects of the procedure, including pedicle development and assessment of symmetry [2,7]. An experienced surgical assistant can also contribute to patient safety by assisting with various aspects of the surgery, such as maintaining a sterile field, haemostasis, handling instruments, and providing additional hands-on support [4]. In more complex cases, such as those involving larger reductions or patients with specific medical conditions, having a surgical assistant can be particularly beneficial. They can help manage unexpected situations and ensure the surgery proceeds smoothly.9 Breast reduction surgery can be physically demanding for the primary surgeon [10] A surgical assistant can help alleviate some of this physical strain by assisting with retraction and other tasks, potentially reducing the risk of surgeon fatigue and burnout during longer procedures [11].

For some surgical teams, working with a consistent surgical assistant can improve coordination and communication during the procedure. Familiarity with each other's techniques and preferences can lead to smoother teamwork, a faster operative time and reduced morbidity [6] While the primary surgeon is responsible for the overall outcome of the surgery, the presence of a skilled surgical assistant can contribute to a positive patient experience by helping to ensure that the procedure goes well and without complications.

In our institution, there are two broad categories of surgical assistants. These include the General Physician Surgical Assistant (GPSA) and a Registered Nurse First Assistant (RNFA). The type of assistant is assigned by the surgical coordinator based on the availability of the assistant and the types of operative procedures being performed on a specific day.

The GPSA is normally a family physician in the local community who provides surgical assistant services once or twice per week in a variety of surgical specialties while the RNFA is a trained full-time surgical assistant assigned to the operating room on a regular daily rotation. These two types of surgical assistants have similar roles intraoperatively, however, the nursing role of the RNFA allows for enhanced roles and responsibilities in the operation room, acting as a liaison or bridge between the physicians and surgeons and the nursing staff [4].

In this study, we have examined a total of 40 bilateral breast reduction procedures stratified into two groups. Group 1 were those cases performed with a GPSA and Group 2 were those operations performed with an RNFA as the surgical assistant. The first twenty cases for each group were entered into this study over a two-year period. The two groups were comparable in terms of demographics including age (Figure 1), breast reduction size and type, complication profile, patient and surgeon satisfaction as well as Body Mass Index (Figure 2). The only statistically significant results were seen in Operative Time and Estimated Blood Loss. The RNFA group showed an average of 92.25 minutes (vs 128.2 minutes) in terms of bilateral breast reduction operative time (Figure 3) and an average of 116.2cc blood loss for bilateral breast reduction procedures for the RNFA group vs 149.25cc for the GPSA group (Figure 4).

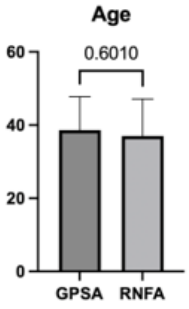

Figure 1: The mean Age between the two groups is consistent among the two groups, having no statistical significance.

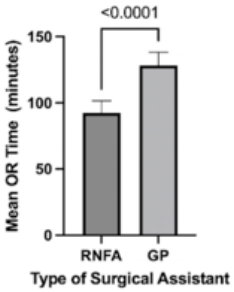

Figure 3: The Operating Room Duration (minutes) showed statistical significance between the two groups, the RNFA group being lower.

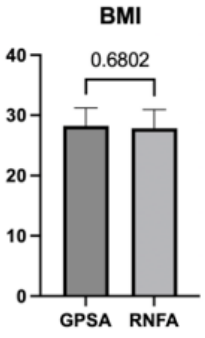

Figure 2: The mean Body Mass Index (BMI) is consistent among the two groups, having no statistical significance.

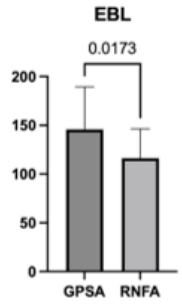

Figure 4: The Estimated Blood Loss (EBL) showed statistical significance between the two groups, the RNFA group being lower.

This result was not unexpected given their familiarity with the primary surgeon but has larger implications given the current climate of healthcare restrictions and cost effectiveness programs for the Ministry of Health and Long-Term Care. It is important to recognize that a surgical assistant should prioritize patient safety and quality of care rather than solely focusing on cutting costs but when these priorities align, as appears to be the case with the use of an RNFA, the choice becomes quite clear [12].

An RNFA is generally less expensive than hiring a physician to assist in surgery [13] The cost difference between an RNFA and a general practitioner assisting in the operating room can be quite significant. The General Physician Surgical Assistant (GPSA) bills the Ministry (MOHLTC) a base unit fee per surgical procedure which is then added to a time component. The time component is broken down to 15-minute time intervals [14] The total time attending the patient is multiplied by the GP surgical assist factor and added to the base pay for a particular surgical procedure. The GP assistant is eligible to start billing for preparing and / or supervising the preparation of the patient for the procedure [14] Performing the procedure by any method, or assisting another physician in the performance of the procedure, assisting with the carrying out of all recovery room procedures and the transfer of the patient to the recovery room, and any ongoing monitoring and detention rendered during the immediate post-operative and recovery period when indicated [14] In the case of a bilateral breast reduction, a 6 unit base unit is received for the case. If the case takes 2 hours, the first hour would represent 4-time units and the 2nd hour would yield 8-time units for a total of 12-time units [14]. Added with the 6 base units, the total units would be 18 units multiplied by the factor of $12.51 would give an average fee of $225.18. Premiums are also applicable to surgery that extends beyond 5pm by 50% which could increase the fee paid out to the GP assistant [14] Conversely, the RNFA is paid an hourly rate which is set by the Ministry of Health and Long-Term Care. The current RNFA salary is approximately $91,000 per year which averages out to $43.75 per hour. For a two-hour case, this translates to $87.50.14 The cost savings in a two-hour bilateral breast reduction between these two different surgical assistant groups is approximately $137.68 per operation (Table 3).

	GPSA	RNFA
Method	Units (18/surgery)	Hourly Rate (2 hours/ surgery)
Factor	$12.51/unit x (18 units/2 hours)	$43.75/hour x (2 hours)
Total	$225.18/surgery	$87.50/surgery
Difference	**$137.68/surgery** ($225.18 - $87.50)	

Table 3: Calculations of The Cost Difference Between Gpsa And Rnfa For Bilateral Breast Reduction Surgery.

In addition to the cost effectiveness of an RNFA, it should be stated from the outset that the RNFA has specialized training to assist in surgical procedures. The RNFA, because of familiarity with the surgeon, understands the nuance of an individual surgeon, sterile technique and surgical equipment that a particular surgeon prefers. This training allows them to be experts in their field and to provide high quality assistance to the surgeon during surgery [15] This familiarity is often superior to the General Physician who may have a broader range of medical knowledge but is not as pertinent in the context of surgical assisting, surgical technique and first aid training being more valuable. The RNFA works closely with the surgeon and other members of the surgical team to ensure that the surgery is performed safely and effectively. They are trained to anticipate the needs of the patient, the surgeon, the nursing team and the anaesthesiologist and provide a valuable bridge between the surgical team members from the start to the end of the procedure [11] The RNFA can assist in a wide range of surgical procedures from routine surgeries to more complex procedures. They can also work in a variety of settings, including the main operating room and ambulatory surgery units of a hospital and outpatient clinics [16]

RNFAs have the knowledge and expertise in scrubbing in on procedures, ensuring a sterile environment, safety, optimizing the patient's and surgeon's surgical experiences, and limiting possible hazards. Through their training, they acquire knowledge in the areas of anatomy, physiology, pathology, and surgical technique and expertise in handling tissue, suturing, providing homeostasis, wound closure, patient care, and understanding of surgical sites [17-19] They are also involved in post and pre-operative care, allowing the surgery to proceed efficiently. Safer surgeries decrease the risk of potential complications such as surgical site infections [6]. Postoperative complications are often associated with prolonged surgical times as continuous exposure of an incision to the outside environment can increase the likelihood of bacterial contamination [20]. The implementation of the RNFA has been seen to lead to significantly reduced operating room duration as they have vast knowledge and much experience in surgical assistance. The primary responsibility of the RNFA is assisting in surgeries, as a result, they have large surgical volumes as they have repetitive experience with a variety of surgeries [3].

To successfully fulfil their role, RNFAs should be able to thrive in times of high pressure and uncertainty both independently and in teams. In the operating room, they work alongside the surgeon, nursing team, and the anesthesiologist to give the patient the safest experience possible. The operating room is a very high pressure and time sensitive environment where patient safety is the top priority [11] As the nursing staff is already obligated to educate and supervise the new nurse's sterile and surgical habits, inexperienced and unknowledgeable assistant staff that are unfamiliar with sterile technique and hospital department

policies can add further stress for them, expanding the nurse's responsibilities [11,21]. Having a reliable and highly qualified surgical assistant such as the RNFA alleviates much of the surgical team's stress, leading to improvements in operative time and blood loss.

In conclusion, this study shows that the use of a RNFA decreases operative time and reduces blood loss in the course of performing bilateral breast reduction procedures. The use of an RNFA over a GPSA is also a more cost-effective use of health care staff, freeing up the GP to perform those tasks for which they were trained for, namely providing clinical physician services to patients. While both nurse and physician surgical assistants can play significant roles in plastic surgery procedures, RNFAs offer unique advantages that set them apart. Their cost-effectiveness, comprehensive training, teamwork and communication skills, nursing background, and flexibility make them a valuable asset to any plastic surgery team and should be considered by hospitals as an optimizing adjunct to the surgical team approach.

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Ethics Statement

All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2008 (5).

No Ethics Committee or Institutional Review Board. Data Study only.

Informed Consent Statement

Informed consent was obtained from all patients included in the study.

Declaration of Conflicting Interests

The Authors declare that there is no conflict of interest.

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Description of author Contributions

1. 1.Sciacca, Julia - literature review, data tabulation, methods and discussion write up
2. Robbins, Jodi - literature review, review of discussion with emphasis on the role of the RNFA and surgical assistance intraoperatively
3. Khan, Adam - literature review, data tabulation, statistics
4. Elahi, Maria Hazoor - literature review, abstract/introduction and statistics
5. Elahi, Mohammed M - senior authour, surgeon, concept of paper, discussion, review of results, overall supervision.

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