

Original Article

Dermatosurgery in a teaching hospital: A significant contribution to the general and reconstructive surgery

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Abstract

Introduction The field of Dermatological surgery has witnessed remarkable advances in the management of cutaneous lesions which require surgical removal or repair.

Objective To evaluate patients undergoing Dermatological surgery for efficacy, safety and complications under local anesthesia.

Methods A Retrospective analysis was performed on patients who underwent Dermatological surgery Under Local Anesthesia in Dermatology Department, Lahore General Hospital. The inclusion criteria included patients aged 10-70 years old, willingness to undergo surgery and providing informed consent. In this study, Total 70 cases from 1st April 2023 till 30th September 2023 were analyzed, who underwent Dermatological surgery under Local Anesthesia such as excision, incisional removal of cysts, grafting for non-healing ulcers, advancements flap for wide excisional surgery near eyes/ and nose, transposition flaps, W-plasty for wide scars, incision drainage of Abscesses, wound debridement and local tissue Repairs.

Results In this study, we performed surgeries under local anesthesia on 70 cases. Out of these 70 cases, 55 cases (78.5%) were of excisional surgeries which were sent for histopathology and immunohistochemistry if needed. 2 cases (2.8%), of W plasties performed. 6 cases (8.5%), of Deep Debridement, 4 cases (5.7%), of advancement flaps and 3 cases (2.8%) of incision drainage performed. Patients reported minimal discomfort during procedures, with a mean pain of 2 out 10 on a visual analogue scale. Furthermore 80% expressed satisfaction based on standardized questionnaires in follow-up visit. Complications were rare, with only two cases that developed infection, which was controlled with antibiotic course.

Conclusion Dermatological surgeries under local anesthesia are an effective and safe option that may also help reduce cost, minimize post-operative recovery time and avoid potential risks associated with general anesthesia.

Key words

Local anesthesia; Dermatosurgery.

Introduction

Dermatosurgery, a developing sub-specialty within dermatology, has made significant advances in recent years, transitioning from a largely aesthetic area to an important contributor

to general surgery cases. The increased use of local anaesthesia methods in dermatological surgical operations has aided this change. The combination of dermatology and general surgery has resulted in unique ways that not only assure patient comfort but also help considerably in the therapy of diverse skin disorders and lesions.¹ Local anaesthesia has emerged as a realistic and patient-centered method in dermatosurgery, reducing the need for sophisticated, resource-intensive general anaesthesia.² Local anaesthesia

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has benefits such as shorter procedure times, better recovery, and fewer problems, making it an appealing alternative for both physicians and patients.³ The development of enhanced local anaesthesia methods and technology has broadened the scope of dermatosurgery, allowing for the treatment of a wide range of skin disorders such as skin malignancies, benign lesions, and reconstructive surgeries.⁴ There are several drugs and procedures available for usage, and the choice of local anaesthesia is mostly dependent on the clinician's experience and comfort level, but is also influenced by patient considerations and concerns. Certain patient demographics, such as individuals with red hair or African Americans, appear to be more sensitive to pain and require greater dosages to induce comparable anaesthesia, with a higher risk of ill effects as a result.⁵

Many topical anaesthetic drugs are effective and safe for use in dermatological treatments, with a minimal risk of side reactions.⁶ However, because there is little evidence to support standard practice, care must be exercised when using occlusion or treating vast surface areas. This is especially true for compounded mixes and nonstandard dosages, which, while used seldom by dermatologists, may raise the risk of severe effects and even death.⁷ In dermatology, there is just one prospective trial that demonstrated four topical formulations to be similar in lowering pain feeling for use in nonablative laser treatment. More thorough study in emergency and obstetric contexts has revealed that various topical anaesthetics are equally beneficial for wound healing.⁸ The introduction of several successful non-cocaine formulations in the 1990s called into question the need for cocaine in topical anaesthesia. A comprehensive assessment of 22 studies involving over 3000 patients was done to find non-cocaine anaesthetics that were possibly less expensive while still being as effective as those

containing cocaine.⁹ Moreover, single studies found that topical anaesthesia alone was adequate for cauterization or excision of genital warts in 97% of men (55 of 57 patients) and skin lesions 40 mm in diameter on the trunk or extremities in 87% of adults (92 of 106 patients) though the degree of repair was not stated. Extrapolating from these findings, it appears that topical anaesthesia alone may be sufficient for simple skin procedures and can be used as an alternative to infiltration anaesthesia.¹⁰

According to clinical experience, treatments such as skin biopsy, excision, wound closure, tissue rearrangement, skin grafting, cauterization, nonablative laser, and ablative laser resurfacing may all be performed effectively under local infiltrative anaesthesia. There is no evidence that infiltrative anaesthesia is more effective than other types of local anaesthesia.¹¹ A sophisticated cutaneous operations, such as full-face ablative laser resurfacing or Mohs micrographic surgery (MMS), combining infiltrative, topical, and local nerve block anaesthesia might be beneficial. Tumescence local anaesthesia and infiltrative anaesthesia can also be used in conjunction with follicular unit hair transplantation to prepare the recipient site.¹⁰

Methods

This retrospective study was conducted in the Dermatological Department of Lahore General Hospital, Lahore. We investigated 70 cases who underwent dermatological surgery. We conducted the research between April 1, 2023 and September 30, 2023. The cases chosen for study were consecutive, and the sampling technique was designed to include a representative sample of patients who matched the qualifying requirements during the timeframe given.

This study included a wide variety of parameters in order to identify patients who were both, good candidates for dermatological surgery under local anaesthesia and important contributors to the research aims. Patients aged 10 to 70 years were included in the trial, ensuring that the study focused on adolescents and adults capable of providing informed consent, comprising a therapeutically relevant cohort. Furthermore, willingness to undergo surgery and giving of informed consent were required for inclusion, emphasizing the ethical significance of patient autonomy and comprehension. Exclusion criteria, on the other hand, served to limit possible dangers related with dermatological surgery and local anaesthesia. Patients under the age of 10 and those over the age of 70 were eliminated to maintain a constant target demographic, while those with bleeding tendencies, uncontrolled diabetes, or ischemic heart disease were removed to reduce the risk of adverse events or complications during surgical operations. These carefully crafted qualifying criteria sought to find a compromise between patient safety and the achievement of significant research outcomes in the setting of dermatological surgery under local anaesthesia. Patient data from medical records and surgical logs were retrieved, including demographics, medical history, preoperative assessments, and surgical procedures.

Surgical intervention Excision, incisional removal of cysts, grafting for non-healing ulcers, advancement flaps, transposition flaps, W-plasty for broad scars, incision drainage of abscesses, wound debridement, and local tissue repairs were all documented.

Assessment tool and questionnaire This study have assessed the pain level by using the a visual analogue scale to quantify pain levels during operations, and a mean pain score was generated. Patient satisfaction was represented as a percentage based on standardized

questionnaires administered during follow-up visits. Infection rates were also reported by using the questionnaire.

Statistical analysis The data was collected by using standardized questionnaires and SPSS v.22 was used to analyze the results. All the categorical variables, frequency and percentages were calculated (gender, satisfaction Rate, complication, interventional surgical procedure, dermatological disease). Mean and standard deviation were calculated of the numerical variables (age and VAS score). We have performed the cross tabulation between gender with rate of infection, satisfaction level, pain score, diagnosed disease and surgical intervention.

Results

In this study, a total of 70 cases from 1st April 2023 till 30th September 2023 were analyzed, who underwent dermatological surgery under local anesthesia such as excision, incisional removal of cysts, grafting for non-healing ulcers, advancements flap for wide excisional surgery near eyes/ and nose, transposition flaps, W-plasty for wide scars, incision drainage of abscesses, wound debridement and local tissue repairs. The frequency of the gender included in the study was 43 (61.4%) male and 27 (38.6%) female. The mean age of the group was 41.82. Out of the 70 patients we have diagnosed based on histopathology, immunohisto-chemistry, serological tests and necessary blood tests (viral serology, CBC, bleeding profile). With the help of these several test this study found that 54 (77.1%) were diagnosed with sebaceous cyst/ epidermoid cyst, 4 (5.7%) were diagnosed with basal cell carcinoma, 2 (2.9%) were diagnosed with keloids or hypertrophic scars and 10 (14.3%) were diagnosed with abscess near face, ear and neck. All these diagnosed patients have been surgically treated with different dermatological surgeries. 55 of the cases

(78.5%) were of excisional surgeries which were sent for histopathology and immunohistochemistry when needed. 2 cases (2.8%) of W plasties performed, 6 cases (8.5%) of deep debridement, 4 cases (5.7%) of advancement flaps and 3 cases (2.8%) of incision drainage performed. After the surgeries we have found that 68 (97.1%) patients have recovered without any complications and only 2 (2.9%) patients were presented with minor infection which was controlled by the use of antibiotics. The satisfaction level of the patients was evaluated and 56 (80%) patients showed that they were very satisfied. **Table 1** describes the intensity of the pain after the dermatological surgery procedure was calculated by the visual analog scale and the minimum VAS value in the patients was (1/10) and the maximum value of the VAS was (3/10) when we calculated the

Table 1 Frequency and percentage.

	Frequency Percentage	
Gender		
Male	43	61.4%
Female	27	38.6%
Total	70	100.0%
Diagnosed patient		
Sebacious cyst/ epidermoid cyst	54	77.1%
Basal Cell Carcinoma	4	5.7%
Keloids or hypertrophic scars	2	2.9%
Abscess near face, ear and neck	10	14.35%
Total	70	100%
Surgical intervention		
Excisional surgeries	55	78.6%
W plasties	2	2.9%
Deep debridement	6	8.6%
Advance flaps	4	5.7%
Incision drainage	3	4.3%
Total	70	100%
Satisfaction level		
Very satisfied	56	80.0%
Satisfied	2	2.9%
Neutral	12	17.1%
Total	70	100%
Complication level		
No complication	68	97.1%
Mild complication	2	2.9%
Total	70	100%

mean and standard deviation of the VAS value it was calculated as (2.014±0.670). **Table 2** describes the minimum, maximum, mean, standard deviation, n, range and median of the age of the patients.

The cross examination of the gender with diagnosis, types of surgery, complication level, satisfaction rate and pain level were performed and the results showed that out of 70 patients, 54 patients were diagnosed with sebacious cyst/epidermoid cyst, out of which 31 (57.4%) were male and 23 (42.6%) were female. There were no female patients in this study that were diagnosed by basal cell carcinoma, 4 (100%) patients. 2 patients were diagnosed with keloid or hypertrophic scars, 1 from each gender and we found 1, (50%) each in both gender. 10 patients were diagnosed with abscess and only 7 were males and 3 were females. 55 patients in which excisional surgery was performed, 32 were male and 23 were female. 2 patients have undergone the W-plasties, 1 from each gender. Deep debridement was performed in 6 patients, 4 (66.7%) were male and 2 (33.3%) were female. No females received the advancement flap surgery, all 4 were the male. 3 incision procedures were performed, 2 (66.7%) were male and 1 (33.3%) was female. Out of 70 patients, 68 patients showed no complications after surgery that included 42 (61.8%) male patients and 26 (39.2%) female. Only 2 patients presented mild complications 1 (50%) from each gender. The VAS value was between 1/10 to 3/10 and out of 15 patients with the VAS score 1, 12 (80%) were male and 3 (20%) were

Table 2 Minimum, maximum, mean, std. deviation, n, range and median.

	Age	Pain Scale VAS
Minimum	10.00	1.00
Maximum	70.00	3.00
Mean	37.3857	2.0143
Std. Deviation	15.47442	.67013
N	70	70
Range	60.00	2.00
Median	36.0000	2.0000

Table 3 Cross tabulation between gender and other variables.

		Gender		Total
		Male	Female	
Diagnoses	Sebaceous cyst/ epidermoid cyst	31 (57.4%)	23 (42.6%)	54
	Basal cell carcinoma	4 (100%)	0	4
	Keloids or hypertrophic scars	1 (50%)	1 (50%)	2
	Abscess near face, ear and neck	7 (70%)	3 (30%)	10
Type of Surgery	Excisional surgeries	32 (58.1%)	23 (41.8%)	55
	W plasties	1 (50%)	1 (50%)	2
	Deep debridement	4 (66.6%)	2 (33.3%)	6
	Advance Flaps	4 (100%)	0	4
	Incision drainage	2 (66.7%)	1 (33.4%)	3
Patient Condition	No complication	42 (61.7%)	26 (38.2%)	68
	Mild complication	1 (50%)	1 (50%)	2
Pain Scale VAS	1.00	12 (80%)	3 (20%)	15
	2.00	21 (53.8%)	18 (46.1%)	39
	3.00	10 (62.5%)	6 (37.5%)	16
Patient satisfaction Score	Very satisfied	36 (64.2%)	20 (35.7%)	56
	Satisfied	1 (50%)	1 (50%)	2
	Neutral	6 (50%)	6 (50%)	12



Figure 1 Pre, post and follow-up.

female. The VAS value 2/10 was found in 39 patients, out of this, 21 (53.8%) were male and 18 (46.2%) were female. The 3/10 VAS value was found in 16 patients, 10 (62.5%) were male and 6 (37.5%) were female. The Satisfaction Survey score was calculated, 56 patients rated that they were “very satisfied” after the dermatological surgery and out of this we found that 36 (64.3%) were male and 20 (35.7%) were female. Only 2 patients rated as “satisfied”, 1 (50%) from each gender. Total 12 patients rate “Neutral” and 6 (50%) were found each in both gender.

Discussion

In this study, 70 cases from 1st April 2023 till

30th September 2023 were analyzed, and reported that dermatological surgeries under local anesthesia are an effective and safe option that may also help reduce cost, minimize post-operative recovery time and avoid potential risks associated with general anesthesia.

Our study aligns with the findings presented by Wong *et al.* (2021) in their investigation of staged interpolation flaps (SIFs) performed under similar conditions. Both studies underscore the feasibility and safety of dermatological procedures conducted under local anesthesia, providing evidence of low pain levels, minimal discomfort, and high patient



Figure 2 Pre, post and follow-up.



Figure 3 Pre, post and follow-up.

satisfaction. The current retrospective analysis, focusing on various dermatological surgeries including excisional procedures, advancements flaps, and drainage of abscesses, demonstrates a mean pain score of 2 out of 10 on the visual analog scale. This is aligned to Wong *et al.*'s findings of minimal to mild pain during staged interpolation flap repairs. Furthermore, the patient satisfaction rate of 80% in this study aligns with the high satisfaction levels (mean 95 ± 1.7) reported by Wong *et al.* This research, like Wong *et al.*'s prospective cohort study, contributes to the growing body of evidence supporting the efficacy and safety of dermatological surgeries under local anesthesia, emphasizing their potential to reduce costs, minimize postoperative recovery time, and mitigate risks associated with general anesthesia.¹²

A research was conducted by Julia Eckardt *et al.* in 2021 on sentinel lymph node biopsy (SLNB) under tumescence local anesthesia (TLA) for melanoma staging. Eckardt *et al.*'s study delves into the domain of melanoma staging through SLNB. Commonalities arise in the reported minimal discomfort by patients during procedures, aligning with the current study's mean pain score of 2 out of 10 on the visual analogue scale. Both studies underscore high patient satisfaction, with 80% expressing contentment in our dermatological surgery study and an impressive 98.7% satisfaction rate in Eckardt *et al.*'s investigation on SLNB. Complication rates were notably low in both studies, with the current dermatological surgery study reporting rare complications, including two cases of infection, and Eckardt *et al.*'s study demonstrating a 3.3% incidence of wound



Figure 4 Pre, post and follow-up.



Figure 5 Pre, post and follow-up.

infection post-SLNB.¹³ Comparatively, this study conducted on dermatological surgeries under local anesthesia and the research conducted by Yu Liu *et al.* regarding tumescent local anesthesia (TLA) for various surgical procedures, show striking similarities in the emphasis on safety, efficacy, and patient satisfaction associated with local anesthesia techniques. Liu *et al.*'s systematic review revealed TLA to be a safe and effective anesthetic approach, with no TLA-associated deaths reported in the extensive cases published since 2003. The results suggested a consistent trend towards the adoption of local anesthesia techniques in various surgical settings, emphasizing their safety, effectiveness, and potential benefits in terms of reduced costs and enhanced patient recovery.¹⁴

In the study by Kelly N. McKnight MD *et al.*; wide-awake local anesthesia without a tourniquet for hand surgeries demonstrated a

low infection rate (4.3%), cost-effectiveness, and remarkably high patient satisfaction (99%). The current retrospective analysis showed an impressive 80% patient satisfaction rate. Both studies underline the feasibility and safety of minor surgical procedures performed in-office with local anesthesia, offering significant cost savings and environmental benefits. These findings collectively contribute to the growing body of evidence supporting the efficacy and patient-centered advantages of local anesthesia in outpatient surgical settings.¹⁵

The study by Alberto Bolletta *et al.* on tumescent local anesthesia (TLA) in breast augmentation surgery and this retrospective analysis share a common emphasis on the safety, efficacy, and patient satisfaction associated with procedures performed under local anesthesia. Bolletta *et al.*'s investigation highlights the successful use of TLA for sub-muscular breast augmentation, reporting a low incidence of

postoperative side effects, no signs of toxicity, and a high level of patient satisfaction.¹⁶ The study conducted by Saskia Maria Schnabl *et al.* investigation focuses on elderly patients (≥ 75 years) undergoing skin tumor surgery with tumescent local anesthesia, demonstrating a low incidence of systemic complications (10.2%), with hypertensive crisis being the most frequent. Both studies contribute to the growing body of evidence supporting the advantages of local anesthesia, showcasing its ability to provide good pain control, low complication rates, and positive patient experiences across different surgical procedures.¹⁷ These results are coherent with this study.

The study conducted by Taichi Imamura MD *et al.* in 2017, focused on the safety of cutaneous surgery in patients aged 90 and older. Imamura *et al.* retrospectively reviewed 104 patients aged 90 and older which underwent cutaneous surgery, comparing them with a control group aged 75–80 years. Despite the difference in age ranges, both studies emphasized safety under local anesthesia. Imamura *et al.* found that the occurrences of intra-operative and postoperative complications were not significantly different between the elderly and control groups, reflecting the safety of cutaneous surgery in the very elderly. Similarly, the current reports minimal discomfort (mean pain of 2 out of 10) during procedures, high patient satisfaction (80%), and rare complications (only two cases of infection). Both studies underscore the safety and efficacy of surgeries under local anesthesia, providing viable alternatives and reducing potential risks associated with general anesthesia.¹⁸

A study by Jerry D. Brewer *et al.* explores the advantages of tumescent anesthesia (TA) in cutaneous surgery, emphasizing its benefits in minimizing discomfort, aiding hemostasis, and facilitating the closure of large defects. In our

the current patients reported minimal discomfort (mean pain score: 2/10), showcasing the patient-centric nature of local anesthesia. In conclusion, dermatological surgeries under local anesthesia, be it TA or other techniques, emerge as effective, safe, and patient-friendly.¹⁹

The study on "Lokalanästhetika mit Adrenalinzusatz an Ohr und Nase" delves into the use of epinephrine-supplemented local anesthetics in surgical procedures involving the ear and nose. The research spans from 1985 to 1997, with a shift to Auto-TLA supplemented with 1:1,000,000 epinephrine in 1997. Their findings, drawn from a substantial sample of 10,201 patients, demonstrate the safety and efficacy of epinephrine supplementation. Complications were notably absent, even in prolonged surgeries involving skin flaps or grafts, with the benefits of reduced bleeding and extended local anesthesia duration.²⁰ The study conducted by Hung *et al.* explores the feasibility of free flap reconstruction in elderly patients with head and neck skin cancer using only local anesthesia. In this retrospective analysis, five elderly patients, deemed high risk for general anesthesia, underwent successful reconstruction with anterolateral thigh or groin free flaps after tumor excision. The outcomes were positive, with all flaps surviving, no complications, and a mean follow-up of 26.6 months. The advantages highlighted include the safety and cost-effectiveness of the operation, absence of complications from general anesthesia, and the ability to perform free flap transfer in elderly patients who cannot tolerate general anesthesia. The results of both studies are coherent with our study in term of safety and satisfaction level.²¹

Conclusion

The current study, encompassing 70 dermatological surgeries under local anesthesia, demonstrated a high success rate with minimal

complications. Predominantly, patients diagnosed with sebaceous cyst/ epidermoid cyst showed no postoperative issues. The satisfaction rate was notably high, with 80% expressing contentment, and pain levels were generally low, averaging 2.01 on the Visual Analog Scale. Gender-wise analysis revealed nuanced patterns, but overall, the procedures were well-tolerated, and complications were effectively managed.

Recommendations

Conduct further investigations with larger sample sizes to enhance the generalizability of findings.

Explore additional parameters influencing patient satisfaction and pain perception.

Limitations

Limited generalizability due to the single-center retrospective design.

Potential biases in patient selection and retrospective data collection.

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