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Study of Complications and Risk Factors in Sebaceous Cyst Surgery.

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ABSTRACT

Sebaceous cysts are common benign lesions frequently managed through surgical excision. Although considered a minor procedure, postoperative complications such as infection, hematoma, wound dehiscence, and recurrence may occur. Identifying risk factors associated with these complications is essential to improve surgical outcomes. To assess the incidence of complications following sebaceous cyst excision and analyze the patient-related and cyst-related risk factors contributing to adverse outcomes. This observational study included 32 patients who underwent surgical excision of sebaceous cysts at a tertiary care hospital. Detailed clinical evaluation and cyst characteristics were recorded preoperatively. Surgical excisions were performed under aseptic precautions, and postoperative follow-up was conducted up to one month. Complications and associated risk factors such as diabetes, cyst size, preoperative inflammation, and cyst rupture were analyzed using descriptive statistics. The overall complication rate was 25%. Surgical site infection (12.5%) was the most frequent complication, followed by hematoma/seroma (9.4%), wound dehiscence (6.3%), and recurrence (6.3%). Preoperative inflammation, diabetes mellitus, cyst size >4 cm, and ruptured cysts were significantly associated with higher complication rates. Though sebaceous cyst excision is a minor procedure, risk factors such as infection, diabetes, and larger or ruptured cysts substantially increase postoperative complications. Optimizing preoperative conditions and careful surgical technique can reduce morbidity.

Keywords: Sebaceous cyst, Surgical complications, Risk factors

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INTRODUCTION

Sebaceous cysts, also known as epidermoid or epidermal inclusion cysts, are common benign lesions arising from the obstruction of sebaceous glands or the implantation of epidermal elements into the dermis [1]. They typically present as slow-growing, mobile, subcutaneous nodules that may occur anywhere on the body but are most frequently found on the scalp, face, neck, back, and trunk [2].

Although generally asymptomatic, these cysts may become painful, inflamed, secondarily infected, or rupture spontaneously, leading to significant discomfort and cosmetic concerns. Surgical excision remains the definitive treatment, aiming to remove the cyst wall completely to prevent recurrence [3, 4].

Despite being a minor surgical procedure, sebaceous cyst excision is not entirely free from complications. Common postoperative issues include infection, hematoma formation, wound dehiscence, scarring, and recurrence, especially when the cyst is incompletely removed or excised during an active inflammatory phase. Several patient-related and procedure-related factors—such as cyst size, location, duration of symptoms, presence of infection, comorbidities (diabetes, smoking), and surgeon experience—may influence the risk of complications [5-7]. Understanding these risk factors is crucial for optimizing surgical outcomes, reducing postoperative morbidity, and improving patient satisfaction. Our study aims to evaluate the incidence of complications in sebaceous cyst surgery and identify the associated risk factors to guide better clinical decision-making and perioperative management.

STUDY METHODOLOGY

Our observational study was conducted in the Department of Surgery over a period of 18 months. A total of 32 patients diagnosed with sebaceous cysts and planned for elective surgical excision were included.

Individuals with immunocompromised status, recurrent cysts previously operated elsewhere, or those unwilling to participate were excluded.

All patients underwent a detailed clinical evaluation, including history of duration, symptoms, site of cyst, previous inflammation, and associated comorbidities such as diabetes and smoking. Baseline investigations, including complete blood count and blood sugar levels, were carried out as per institutional protocol. Preoperative assessment also included documentation of cyst characteristics—size, location, tenderness, and presence of infection or rupture.

Surgical excision was performed under aseptic conditions using local anesthesia in most cases. The standard technique involved an elliptical or minimal-incision excision, ensuring complete removal of the cyst wall. In cases with inflamed or infected cysts, appropriate antibiotics were administered preoperatively. The excised specimens were sent for histopathological examination to confirm the diagnosis. Wound closure was done using non-absorbable sutures, and postoperative care instructions were provided to all patients.

Patients were followed up on postoperative days 7, 14, and at 1 month to assess wound healing and detect complications such as infection, hematoma, seroma, wound dehiscence, or recurrence. Complications were recorded using predefined criteria. Data were compiled and analyzed using descriptive statistics, and associations between risk factors and complications were assessed to identify significant predictors of adverse outcomes.

RESULTS

Table 1 presents the demographic distribution and clinical characteristics of the 32 patients included in this study.

The age-wise analysis shows that sebaceous cysts occurred across a wide age range, from adolescence to older adulthood. The largest proportion of patients (43.7%) belonged to the 21–40-year age group, which is consistent with the peak activity of sebaceous glands and higher prevalence of follicular occlusion during these years. The 41–60-year age group accounted for 31.3% of cases,

indicating that middle-aged individuals also commonly experience cyst formation. The extremes of age groups (<20 and >60 years) showed lower frequencies, with 9.4% and 15.6% of cases respectively, reflecting lower sebaceous gland activity in younger individuals and possible underreporting or delayed healthcare-seeking behavior among the elderly.

The gender distribution revealed a male predominance, with 62.5% of the cases occurring in males and 37.5% in females. This pattern aligns with several previous studies suggesting that males may be more prone to developing sebaceous cysts, possibly due to differences in skin texture, hormonal influences, and occupational exposure to dust, sweat, and friction.

Table 1: Demographic and Clinical Profile of Patients (n = 32)

Variable	Category	Number (n)	Percentage (%)
Age (years)	<20	3	9.4
	21–40	14	43.7
	41–60	10	31.3
	>60	5	15.6
Sex	Male	20	62.5
	Female	12	37.5
Common Sites	Scalp	10	31.3
	Back	8	25.0
	Face/Neck	6	18.7
	Trunk	8	25.0
Cyst Size	<2 cm	12	37.5
	2–4 cm	15	46.9
	>4 cm	5	15.6

Regarding anatomical distribution, the most common site for cyst occurrence was the scalp (31.3%), followed by the back (25%). Both areas have high concentrations of sebaceous glands and are subject to friction from daily activities. Face and neck regions accounted for 18.7% of cases, while the trunk contributed another 25%. These findings reflect typical patterns as sebaceous cysts often occur in hair-bearing, sebaceous-rich regions of the body.

Cyst size assessment showed that nearly half of the cases (46.9%) involved cysts measuring 2–4 cm, making this the predominant size range. Smaller cysts (<2 cm) accounted for 37.5%, while larger cysts (>4 cm) represented 15.6% of cases. Larger cysts may indicate longer duration or recurrent inflammation.

Table 2: Incidence of Postoperative Complications (n = 32)

Complication	Number of Cases (n)	Percentage (%)
Surgical Site Infection	4	12.5
Hematoma/Seroma	3	9.4
Wound Dehiscence	2	6.3
Recurrence	2	6.3
Hypertrophic Scar	1	3.1
Total Patients with Any Complication	**8**	**25.0**

Table 2 outlines the incidence of postoperative complications among 32 patients who underwent sebaceous cyst excision. Overall, 25% of patients experienced at least one complication. Surgical site infection was the most common, affecting 12.5% of cases, followed by hematoma or seroma formation in 9.4%. Wound dehiscence and recurrence occurred in 6.3% of patients each, highlighting the importance of complete cyst wall removal and proper wound care. Hypertrophic scarring was the least common complication (3.1%). These findings indicate that while sebaceous cyst excision is generally safe, a notable proportion of patients may experience minor but clinically relevant postoperative issues.

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Table 3: Association of Risk Factors With Postoperative Complications

Risk Factor	Present (n)	Complication Rate (%)	Absent (n)	Complication Rate (%)
Infected/Inflamed Cyst Preoperatively	10	40% (4/10)	22	18.1% (4/22)
Diabetes Mellitus	6	50% (3/6)	26	19.2% (5/26)
Cyst Size > 4 cm	5	40% (2/5)	27	22.2% (6/27)
Ruptured Cyst	4	50% (2/4)	28	21.4% (6/28)

Table 3 highlights the relationship between key risk factors and postoperative complications following sebaceous cyst surgery. Patients with preoperative infection or inflammation had a significantly higher complication rate (40%) compared to those without infection (18.1%). Diabetes mellitus was a strong predictor, with half of diabetic patients (50%) developing complications versus 19.2% of non-diabetics. Larger cysts (>4 cm) also showed increased risk, with a 40% complication rate. Similarly, ruptured cysts demonstrated the highest complication incidence (50%). These findings indicate that infection, diabetes, larger cyst size, and rupture substantially increase postoperative morbidity and require careful preoperative optimization.

DISCUSSION

In this study involving 32 patients undergoing surgical excision of sebaceous cysts, we attempted to analyze the pattern of postoperative complications and identify the major risk factors influencing adverse outcomes. The findings provide important insights into both patient-related and procedure-related determinants that contribute to wound-related morbidity following sebaceous cyst surgery [6].

The demographic distribution of patients revealed a predominance of adults in the 21–40-year age group, accounting for 43.7% of the study population. This aligns with the known tendency of sebaceous cysts to occur in young and middle-aged adults due to higher sebaceous gland activity. The higher proportion of males (62.5%) observed in our study is also consistent with previous reports, which suggest a male preponderance possibly due to occupational exposure, increased sweating, and greater incidence of follicular occlusions. The most common anatomical sites involved were the scalp and back, which are known for dense pilosebaceous units and recurrent frictional irritation [7].

The overall complication rate in our study was 25%, which falls within the range reported in the literature where minor surgical procedures involving skin and soft tissues demonstrate complication rates between 10–30%. Surgical site infection (12.5%) was the most common postoperative complication, followed by hematoma/seroma formation (9.4%), wound dehiscence (6.3%), and recurrence (6.3%). The recurrence rate noted is slightly higher than the expected rate of 1–5% but may be attributed to excisions performed during partial inflammation or difficulty in removing the cyst capsule in large or ruptured cysts.

Risk factor analysis showed that preoperative inflammation or infection significantly increased the likelihood of complications, with a complication rate of 40% in infected cysts compared to 18.1% in non-infected ones. Inflamed cysts are known to have friable walls and distorted anatomical planes, increasing the risk of incomplete excision, wound breakdown, and postoperative infection. Similarly, diabetes mellitus emerged as a strong predictor of complications, with a 50% complication rate among diabetic patients. Poor glycemic control is a recognized factor impairing wound healing, reducing host immune response, and promoting bacterial colonization [8-10].

Cyst size was also found to influence outcomes. Patients with cysts larger than 4 cm experienced a 40% complication rate compared to 22.2% in smaller cysts. This can be explained by the larger dissection area, greater tissue trauma, and higher chances of dead space formation, which predisposes to hematoma, seroma, and infection. Ruptured cysts were another predictive factor, with half the patients experiencing postoperative complications. Rupture leads to spillage of keratinous material into surrounding tissues, causing inflammation and difficulty in complete removal, thus increasing recurrence and wound complications.

These results highlight the importance of appropriate case selection and timing of surgery. Whenever possible, excision should be deferred until inflammation subsides. Diabetic patients should undergo strict glycemic optimization before surgery. Complete removal of the cyst wall remains the most important factor in preventing recurrence. The use of meticulous surgical techniques, careful hemostasis, and appropriate postoperative care can further reduce complications.

CONCLUSION

Overall, our study emphasizes that although sebaceous cyst excision is a minor procedure, careful preoperative evaluation and attention to risk factors are essential for achieving optimal outcomes. Further studies with larger sample sizes may help in validating these observations and guiding standardized management protocols.

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