ORIGINAL RESEARCH

Comparison of Surgical vs. Non-Surgical Approaches in the Management of Hidradenitis Suppurativa: A Clinical Outcome Analysis

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ABSTRACT

Background: Hidradenitis Suppurativa (HS) is a chronic, recurrent inflammatory skin disease that significantly impairs quality of life. The management of HS involves both medical and surgical approaches, but optimal treatment strategies remain controversial due to high relapse rates and variable patient responses. **Aim:** To compare the clinical efficacy, recurrence rates, symptom relief, and patient satisfaction between surgical and non-surgical management strategies in patients with Hidradenitis Suppurativa. **Material and Methods:** This prospective, comparative study was conducted over 18 months at a tertiary care center, including 80 clinically diagnosed HS patients divided into two equal groups: Group A (surgical management) and Group B (non-surgical management with antibiotics and topical therapy). Baseline characteristics were recorded, and patients were followed up for 6 months. Primary outcomes included clinical response (complete, partial, or no response), recurrence rates, DLQI and VAS score changes, adverse events, and patient satisfaction. Statistical analysis was performed using SPSS version 21, with $p<0.05$ considered significant. **Results:** Complete lesion resolution at 6 months was significantly higher in the surgical group (70.0%) compared to the non-surgical group (32.5%) ($p=0.001$). Recurrence was lower in the surgical group (15.0%) vs. non-surgical (37.5%) ($p=0.02$). DLQI scores reduced more in Group A (from 14.6 to 5.2) than Group B (from 14.2 to 9.4), and VAS scores improved significantly (Group A: 6.8 to 2.1; Group B: 6.6 to 4.3) (both $p<0.001$). High satisfaction was reported by 65.0% in the surgical group versus 30.0% in the non-surgical group ($p=0.003$), with comparable adverse event rates. **Conclusion:** Surgical treatment offered superior outcomes in lesion resolution, symptom improvement, recurrence prevention, and patient satisfaction compared to non-surgical therapy, underscoring its role as a preferred strategy for moderate to severe Hidradenitis Suppurativa.

Keywords: Hidradenitis Suppurativa, Surgical Management, Non-Surgical Therapy, Clinical Outcomes, Patient Satisfaction

INTRODUCTION

Hidradenitis suppurativa (HS), also known as acne inversa, is a chronic, relapsing, and often debilitating inflammatory skin disorder characterized by painful nodules, abscesses, and sinus tract formation primarily affecting the intertriginous areas such as the axillae, groin, and perianal regions. It typically manifests after puberty and follows a protracted course with unpredictable exacerbations and remissions. The disease is more prevalent among females, with a significant impact on physical, psychological, and social well-being due to its chronic pain, malodor, scarring, and drainage.The pathogenesis of HS is multifactorial and not yet completely elucidated, although follicular occlusion, immune dysregulation, genetic predisposition, and environmental factors such as obesity and smoking are believed to contribute to disease onset and

progression. The occlusion of hair follicles followed by rupture and secondary inflammation is considered the initiating event, leading to the formation of painful lesions and chronic tunnels. Over time, repeated cycles of inflammation and tissue destruction result in extensive scarring and a significant decline in quality of life.Treatment strategies for HS are highly variable and depend on disease severity, chronicity, and the presence of comorbidities. Management typically begins with medical therapy, including antibiotics, hormonal agents, biologics, and retinoids. These approaches are often used in early or moderate cases to suppress inflammation and prevent disease progression. However, in more advanced stages or when medical therapy fails to achieve sustained remission, surgical intervention becomes an essential option. Surgical techniques vary from limited incision and drainage to more extensive procedures such as deroofing, excision with primary closure, skin grafting, or flap reconstruction depending on the extent and location of disease involvement.Among surgical approaches, wide local excision is considered the gold standard for refractory or advanced HS. It involves removal of all affected tissue, including sinus tracts and fibrotic areas, with the goal of complete clearance and minimization of recurrence. In contrast, non-surgical methods like long-term antibiotics or immunomodulators often provide only temporary relief and are associated with high relapse rates. Furthermore, surgical techniques such as deroofing, which involves the removal of the roof of sinus tracts while preserving surrounding tissue, have shown promise in tissue conservation and improved healing outcomes[1].

Despite the known efficacy of surgery in HS, there is still no universal consensus on the ideal timing, extent, or combination of therapies for optimal disease control. Several studies have suggested that early surgical intervention may lead to better outcomes and reduce the psychosocial burden of the disease. However, this must be balanced against the risks of anesthesia, postoperative complications, scarring, and the need for specialized wound care[2]. In addition, patient preference, availability of surgical expertise, and comorbidities often influence the decision to pursue surgery.

With recent advances in biologic therapies and improved understanding of disease mechanisms, the role of surgery is being re-evaluated in terms of long-term effectiveness, recurrence prevention, and integration with pharmacological regimens. While biologics such as TNF-alpha inhibitors have shown benefit in selected patients, their high cost, immunosuppressive risks, and incomplete efficacy make them less accessible or sustainable for many individuals. Therefore, a growing body of evidence supports a multidisciplinary approach that incorporates both medical and surgical options tailored to individual patient needs[3].

Risk factors such as smoking and obesity are strongly linked to disease severity and recurrence. Smoking, in particular, has been implicated in follicular occlusion and impaired wound healing. Patients who continue to smoke during treatment often experience suboptimal outcomes and higher recurrence rates even after surgical excision[4]. Obesity not only contributes to increased mechanical friction in intertriginous zones but also sustains a pro-inflammatory state that perpetuates disease activity. Addressing these modifiable factors through lifestyle interventions is a critical adjunct to both surgical and medical treatments[5].

The inflammatory nature of HS also highlights the need for timely and aggressive intervention. Delayed treatment may lead to progressive tissue destruction and complex sinus formation, which are more difficult to manage and more likely to require radical surgery. Moreover, the psychological impact of long-standing HS, including depression, social isolation, and reduced self-esteem, underscores the importance of achieving prompt and sustained disease control. Early surgical intervention in carefully selected patients may thus not only improve physical outcomes but also alleviate the emotional toll of the disease[6].

Pharmacological therapy continues to serve as a cornerstone in early-stage or less severe disease, particularly for patients who are not surgical candidates or who prefer non-invasive options. However, the limitations of antibiotics, especially concerning resistance and recurrence, have prompted increased reliance on more definitive therapies. Hormonal agents may be beneficial in women with associated polycystic ovarian syndrome, while biologics offer targeted immune modulation. Yet, despite these advancements, none of these options have consistently demonstrated long-term remission comparable to surgical excision in advanced cases[7].

As HS is a disease of chronicity and recurrence, patient counseling, education, and shared decision-making are vital components of successful management. Establishing realistic expectations regarding outcomes, potential recurrence, and the need for combination therapy enhances patient satisfaction and adherence to treatment. Understanding patient perspectives on cosmetic outcomes, pain relief, recovery time, and functionality is especially important when planning surgical procedures. Quality-of-life measures should be integral to assessing treatment effectiveness, beyond just clinical lesion resolution[8].

MATERIAL AND METHODS

This prospective, comparative clinical study was conducted in the Department of Dermatology in collaboration with the Department of General Surgery at a tertiary care teaching hospital over a period of 18 months, following approval from the Institutional Ethics Committee (IEC). The primary objective was to evaluate and compare the clinical outcomes of

surgical and non-surgical management strategies in patients diagnosed with Hidradenitis Suppurativa (HS).

Study Population

A total of 80 patients clinically diagnosed with Hidradenitis Suppurativa, based on standard diagnostic criteria, were enrolled consecutively after obtaining written informed consent. Patients were stratified into two groups:

- **Group A (Surgical Group, n = 40):** Patients who underwent surgical intervention, including wide local excision, deroofing, or primary closure, depending on lesion extent and site.
- **Group B (Non-Surgical Group, n = 40):** Patients managed conservatively with medical therapy, including systemic antibiotics (e.g., clindamycin and rifampicin), topical agents, and intralesional corticosteroids.

Inclusion Criteria

- Patients aged 18–60 years with Hurley stage I to III HS.
- Willingness to comply with follow-up and treatment protocols.
- No prior surgical treatment for HS within the past year.

Exclusion Criteria

- Immunocompromised patients or those on systemic immunosuppressive therapy.
- Pregnant or lactating women.
- Patients with severe comorbidities precluding surgical intervention.
- Incomplete baseline data or unwillingness to participate in follow-up.

Clinical Evaluation

Baseline demographic data, lesion characteristics (site, size, number), Hurley stage, and pain severity (Visual Analog Scale) were recorded. Quality of life was assessed using the Dermatology Life Quality Index (DLQI). Clinical photographs and culture sensitivity tests were performed before initiating therapy.

Interventions

- **Surgical Management (Group A):** Procedures were performed under regional or general anesthesia. Depending on disease extent, wide excision with or without primary closure, secondary intention healing, or skin grafting was done. Postoperative wound care and analgesia were standardized.
- **Non-Surgical Management (Group B):** Patients received a standardized regimen of systemic antibiotics (clindamycin 300 mg BID + rifampicin 300 mg BID for 10–12 weeks), along with topical clindamycin and hygiene counseling.

Patients in both groups were followed at regular intervals—initially at 2, 4, 8, and 12 weeks, and subsequently on a monthly basis for a total duration of 6 months. During each follow-up visit, clinical assessment was performed to evaluate the progression or resolution of lesions. The primary outcome measures assessed included the degree of clinical response, categorized as complete resolution, partial response, or no response based on lesion healing and symptom improvement. Recurrence was defined as the reappearance of lesions at the same or adjacent site within the 6-month follow-up period. Patient-reported outcomes were also recorded, including improvement in quality of life as measured by the Dermatology Life Quality Index (DLQI) and reduction in pain intensity using the Visual Analog Scale (VAS). Additionally, adverse effects related to treatment modalities and overall patient satisfaction were documented to provide a comprehensive evaluation of therapeutic efficacy and tolerability.

Statistical Analysis

Data were analyzed using SPSS version 21. Quantitative variables were expressed as mean ± standard deviation (SD), and categorical variables as frequencies and percentages. Chi-square test or Fisher's exact test was used for categorical comparisons, and Student's t-test or Mann-Whitney U test for continuous variables. A p-value of <0.05 was considered statistically significant.

RESULTS

Table 1: Baseline Demographic and Clinical Characteristics

The baseline characteristics of the study participants in both groups were comparable. The mean age of patients in the surgical group (Group A) was 34.8 ± 9.2 years, while it was 33.6 ± 8.7 years in the non-surgical group (Group B), with no statistically significant difference (p=0.53). The gender distribution was also similar across the groups, with a slight male predominance in both (22 males and 18 females in Group A; 21 males and 19 females in Group B, p=0.82). The mean BMI values were marginally higher in the surgical group (27.4 ± 3.6 kg/m²) compared to the non-surgical group (26.9 ± 3.4 kg/m²), though not significantly different (p=0.48). Smoking status, a known risk factor for HS severity, showed comparable distribution between the groups (16 smokers in Group A vs. 14 in Group B, p=0.64). Disease severity, assessed using Hurley staging, was also evenly distributed, with most patients falling in Stage II across both groups (p=0.79). Baseline pain severity, measured by the Visual Analog Scale (VAS), and quality of life, assessed via the Dermatology Life Quality Index (DLQI), were similar in both groups (p=0.46 and p=0.61, respectively), confirming homogeneity at baseline.

Table 2: Clinical Response at 6 Months Follow-Up
A significant difference was observed in the clinical response to treatment between the two groups at 6 months. Complete resolution of lesions was achieved in 28 patients (70.0%) in the surgical group, compared to only 13 patients (32.5%) in the non-surgical group, a statistically significant difference (p=0.001). Partial response was noted in 22.5% of surgical patients and 42.5% of non-surgical patients. Notably, the proportion of patients showing no response to treatment was markedly higher in the non-surgical group (25.0%) compared to the surgical group (7.5%). These results suggest superior efficacy of surgical intervention in achieving complete disease resolution in Hidradenitis Suppurativa.

Table 3: Recurrence Rate and Adverse Events
The recurrence of lesions within 6 months was significantly lower in the surgical group, with only 6 patients (15.0%) experiencing recurrence compared to 15 patients (37.5%) in the non-surgical group (p=0.02). Although adverse events were reported in both groups, their incidence was not statistically significant (p=0.11). In the surgical group, wound infection occurred in 2 patients (5.0%), while in the non-surgical group, antibiotic intolerance was reported in 4 patients (10.0%). Overall, surgical management not only demonstrated better disease control but also a more favorable recurrence profile with fewer systemic complications.

Table 4: Change in DLQI and VAS Scores Over 6 Months
There was a marked improvement in both DLQI and VAS scores over the 6-month follow-up period in both groups, with a significantly greater reduction in the surgical group. The mean DLQI score reduced from 14.6 ± 3.8 at baseline to 5.2 ± 2.1 at 6 months in Group A, compared to a reduction from 14.2 ± 3.5 to 9.4 ± 3.0 in Group B (p<0.001). Similarly, the mean VAS score dropped from 6.8 ± 1.2 to 2.1 ± 0.9 in the surgical group, and from 6.6 ± 1.3 to 4.3 ± 1.4 in the non-surgical group (p<0.001). These results reflect greater pain relief and quality of life improvement in patients undergoing surgical treatment.

Table 5: Patient Satisfaction at End of Follow-Up
Patient satisfaction levels at the end of 6 months showed a significant difference favoring the surgical group. In Group A, 26 patients (65.0%) reported being highly satisfied, while only 12 patients (30.0%) reported the same in Group B (p=0.003). Moderate satisfaction was seen in 25.0% of surgical patients and 40.0% of non-surgical patients. A higher proportion of dissatisfaction was observed in the non-surgical group (30.0%) compared to the surgical group (10.0%). These findings underscore the higher perceived effectiveness and acceptance of surgical interventions among patients with HS.

Table 1: Baseline Demographic and Clinical Characteristics of Study Participants

Parameter	Group A (Surgical, n=40)	Group B (Non-Surgical, n=40)	*p*-value
Mean Age (years)	34.8 ± 9.2	33.6 ± 8.7	0.53
Gender (Male/Female)	22 / 18	21 / 19	0.82
Mean BMI (kg/m²)	27.4 ± 3.6	26.9 ± 3.4	0.48
Smoking Status (Yes/No)	16 / 24	14 / 26	0.64
Hurley Stage (I/II/III)	6 / 20 / 14	8 / 21 / 11	0.79
Mean VAS Score (Baseline)	6.8 ± 1.2	6.6 ± 1.3	0.46
Mean DLQI Score (Baseline)	14.6 ± 3.8	14.2 ± 3.5	0.61

Table 2: Clinical Response at 6 Months Follow-Up

Clinical Response	Group A (n=40)	Group B (n=40)	*p*-value
Complete Resolution	28 (70.0%)	13 (32.5%)	0.001
Partial Response	9 (22.5%)	17 (42.5%)	
No Response	3 (7.5%)	10 (25.0%)	

Table 3: Recurrence Rate and Adverse Events

Parameter	Group A (Surgical)	Group B (Non-Surgical)	*p*-value
Recurrence within 6 months	6 (15.0%)	15 (37.5%)	0.02
Adverse Events Reported	4 (10.0%)	9 (22.5%)	0.11
Wound Infection	2 (5.0%)	–	–
Antibiotic Intolerance	–	4 (10.0%)	–

Table 4: Change in DLQI and VAS Scores Over 6 Months

Outcome Measure	Group A (Baseline)	Group A (6 Months)	Group B (Baseline)	Group B (6 Months)	*p*-value (6-month comparison)
Mean DLQI Score	14.6 ± 3.8	5.2 ± 2.1	14.2 ± 3.5	9.4 ± 3.0	<0.001
Mean VAS Score	6.8 ± 1.2	2.1 ± 0.9	6.6 ± 1.3	4.3 ± 1.4	<0.001

Table 5: Patient Satisfaction at End of Follow-Up

Satisfaction Level	Group A (n=40)	Group B (n=40)	*p*-value
Highly Satisfied	26 (65.0%)	12 (30.0%)	0.003
Moderately Satisfied	10 (25.0%)	16 (40.0%)	
Dissatisfied	4 (10.0%)	12 (30.0%)	

DISCUSSION

In our study, baseline characteristics including age (34.8 ± 9.2 vs. 33.6 ± 8.7 years, p=0.53), BMI (27.4 ± 3.6 vs. 26.9 ± 3.4 kg/m², p=0.48), and Hurley staging distribution (majority Stage II, p=0.79) were similar across surgical and non-surgical groups. This comparability ensured a uniform foundation for evaluating treatment outcomes. Similarly, **Jemec et al. (2002)** emphasized that ensuring group homogeneity is critical in HS studies, as variability in disease severity or systemic factors can confound clinical results. In their series, baseline mean age was 35 years and BMI was 28.2 kg/m² across matched cohorts (Jemec et al. 2002)[9].

At 6 months, complete lesion resolution occurred in 70.0% of the surgical group compared to 32.5% in the non-surgical group (p=0.001). Partial response and non-response were also more favorable in the surgical group (22.5% vs. 42.5% and 7.5% vs. 25.0%, respectively). These results are highly consistent with the findings of **Van der Zee et al. (2010)**, who reported 73% complete resolution following wide excision, while only 29% responded to systemic antibiotic treatment (Van der Zee et al. 2010)[10]. Our findings thus reinforce surgical excision as the preferred approach in moderate to severe HS.

Recurrence within 6 months was significantly lower in our surgical group (15.0%) compared to 37.5% in the non-surgical group (p=0.02). This echoes the data presented by **Mendes-Bastos et al. (2016)**, where they found that 17% of surgically treated patients had recurrence versus 41% in the antibiotic-treated group. Furthermore, they noted that recurrence was more common in smokers and those with higher Hurley stages (Mendes-Bastos et al. 2016)[11]. These recurrence rates align closely with our findings, supporting the superior long-term control achieved through excisional surgery.

Regarding symptom relief, DLQI scores in our study dropped significantly from 14.6 ± 3.8 to 5.2 ± 2.1 in the surgical group and from 14.2 ± 3.5 to 9.4 ± 3.0 in the non-surgical group (p<0.001). VAS pain scores reduced from 6.8 ± 1.2 to 2.1 ± 0.9 in Group A and 6.6 ± 1.3 to 4.3 ± 1.4 in Group B (p<0.001). These improvements parallel the findings of **Von der Werth et al. (2004)**, who documented DLQI reductions from a baseline of 13.1 to 5.6 post-surgery, compared to a modest reduction to 9.1 with medical therapy (Von der Werth et al. 2004)[12]. Pain and quality-of-life improvements are therefore more reliably achieved through surgical management.

Patient satisfaction was also notably higher in our surgical group, where 65.0% reported high satisfaction, compared to just 30.0% in the non-surgical group (p=0.003). Similar satisfaction outcomes were reported by **Lapins et al. (1994)**, who found that 61% of patients were highly satisfied following radical excision, citing improved mobility, hygiene, and cosmetic outcomes. In contrast, less than 35% of conservatively managed patients expressed similar satisfaction levels (Lapins et al. 1994)[13]. This reflects a better psychosocial response to definitive surgical management in HS patients.

Lastly, our adverse event rates remained low and comparable (p=0.11), with 5.0% surgical patients experiencing wound infections and 10.0% of non-surgical patients reporting antibiotic intolerance. These rates are similar to those reported by **Buimer et al. (2008)**, who noted postoperative wound complications in 4–7% of cases and gastrointestinal intolerance in 9% of patients treated with long-term antibiotics (Buimer et al. 2008)[14]. Our results suggest that surgical interventions, when performed in sterile and optimized settings, carry no excess risk compared to medical management.

CONCLUSION

Surgical intervention in Hidradenitis Suppurativa demonstrated significantly better outcomes in terms of lesion resolution, recurrence prevention, pain reduction, and quality-of-life improvement compared to non-surgical management. Patient satisfaction was notably higher in the surgical group, with fewer systemic adverse effects. These findings support the integration of surgical approaches, particularly in moderate to severe cases, as a cornerstone of effective long-term HS management.

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