

Comparison of Surgical Excision with Botulinum Toxin (Botox) Injection for Treatment of Hidradenitis Suppurativa in Axillary Region

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ABSTRACT

Objective: To compare the outcome of surgical excision with botulin toxin injection for treatment of hidradenitis suppurativa in the axillary region was the objective of this study.

Study design: Randomized controlled trial study.

Place and Duration of Study: The study was conducted in Department of Plastic Surgery and Dermatology, Bakhtawar Amin Teaching and Trust Hospital, Multan from July, 2017 to July 2018.

Materials and Methods: Fifty patients with diagnosis of hidradenitis suppurativa in axillary region were included for clinical trial. The patients were randomly allocated in two equal groups (25 patients in each group). The patients in surgery group underwent surgical excision and in botulinum toxin injection group received treatment with botulinum toxin injection with an interval of hidradenitis suppurativa. The patients were followed up for 6 months for outcome parameters i.e. recurrence of disease and patient satisfaction after both procedures.

Results: Mean age of the patients with Hidradenitis suppurativa were 28.69±5.61 and 29.11±5.17 years in surgery group and botulin toxin group. There were 18 (72.0%) males and 7 (28.0%) females in surgery group and 19 males (76.0%) and 6 (24.0%) females in botulinum toxin group. Overall recurrence was 4.0% after and 12.0% after surgical wide excision and Botulin Toxin Injection, respectively. The overall patient satisfaction was 88.0% with Botulin Toxin Injection treatment and 76.0% with surgical excision.

Conclusions: Surgical wide excision of hidradenitis suppurativa was found superior to Botulin toxin injection treatment in terms of recurrence and patient satisfaction.

Key Words: Hidradenitis suppurativa; Surgical wide excision; Botulin toxin injection

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INTRODUCTION

In 1854, a French surgeon named "Aristide Verneuil" first defined the chronic inflammatory condition of apocrine sweat glands as Hidradenitis suppurativa.^{1,2} Reported prevalence of this disease is 1% worldwide in overall population, so it is considered as a rare pathology.^{3,4} The disease is most common among young females with a male to female ratio of 1:3.^{5,6}

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No specific or single causative agent is responsible for this condition. A positive family history, obesity and tobacco smoking are the risk factors.⁷ Hidradenitis suppurativa is diagnosed clinically by the appearance of nodules, sinuses and recurrent abscess formation with scarring of skin. Primary lesion is single, pus discharging, painful nodule and secondary lesions are multiple pus or serous fluid discharging sinus.⁸ The most affected site is groin followed by axillary skin. Long standing Hidradenitis suppurativa can lead to complications e.g. cellulitis, Obstructed lymph drainage, malignancy (squamous cell carcinoma) and social isolation.⁹ Stage of disease determines the treatment choice of this disease. Cure is possible only with surgical excision of diseased skin.¹⁰ Other treatment options include topical antiseptics, oral antibiotics, intralesional steroids, incision and drainage of abscess, antiandrogens, retinoid, Anti-TNF drugs, lasers and radiotherapy.^{11,12} Excision with primary closure, secondary intention healing or graft is the curative surgery.¹³

Botulinum toxin A has freshly been introduced as an innovative treatment choice for patients with

Hidradenitis suppurativa.¹⁴ Botulinum toxin works by inhibiting the release of acetylcholine at the level of postganglionic cholinergic synapses. As a result, there is sympathetic activation of apocrine sweat glands is reduced which eventually leads to healing of the lesions by limiting the tendency of follicular rupture and inflammation.¹⁴

In the literature, there are only few cases which have been reported in literature for the treatment of hidradenitis suppurativa with botulinum toxin. The treatment has shown promising results in these reports. However, the data is limited. Still, there is no consensus about various options of treatment. Surgery is most commonly adopted treatment and is considered treatment of choice. This study was designed to compare the surgical excision with botulin toxin injection for treatment of hidradenitis suppurativa.

MATERIALS AND METHODS

This prospective study was conducted in the Department of Plastic Surgery and Dermatology, Bakhtawar Amin Teaching and Trust Hospital, Multan from July, 2017 to July 2018. The study included 50 patients with Hidradenitis suppurativa in axillary region, of either gender and above 18 years of age. Patients with previously failed medical treatment were also included in the study. Patient with abscess, previously failed surgical and botulin toxin injection treatment, diabetes mellitus, immunosuppression, pregnancy and dermatological diseases were excluded from the study. Patients with hidradenitis suppurativa were classified into three stages according to Hurley staging system i.e. stage I: abscess formation, single or multiple, without sinus tracts and cicatrization, stage II: recurrent abscesses with tract formation and cicatrization, single or multiple, widely separated lesions; and stage III: diffuse or near-diffuse involvement, or multiple interconnected tracts and abscesses across the entire area. Patients were divided into two groups.

Surgery group: patients underwent surgical excision of Hidradenitis suppurativa in axilla and skin defect closed primarily or replaced with skin grafting.

Botulinum toxin group: patients received botulin toxin injection treatment

In surgery group, all surgical procedures were performed under general anesthesia with standard surgical techniques for excision of hidradenitis suppurativa and the defect was closed primarily or with skin grafting. In botulinum toxin group, the patient were injected botulinum toxin A, intradermally in a grid with 1- 1.5 cm between every injection in affected areas (maximum 4000U per patient per treatment), every 3rd month for two times. Demographic features, history and physical examination were noted. Outcomes of both procedures were recorded and compared by chi-square test. P-value < 0.05 was taken significant. The data was

entered into SPSS version 20, computer program and analyzed accordingly.

RESULTS

The mean age of patients with Hidradenitis suppurativa were 28.69±5.61 and 29.11±5.17 years in surgical excision group and botulinum toxin group, respectively. There were 18 (72.0%) males and 7 (28.0%) females in group I and 19 males 9 (76.0%) males and 6 (24.0%) females in group II. The male to female ratio was 1:2.8. The mean body mass indexes were 31.14±2.78 and 32.01±1.98 Kg/m² in group I and II, respectively. The sites of hidradenitis suppurativa were axilla in 82.0% patients and groin in 18.0% patients.

Table No.I: Distribution of patient with Hidradenitis suppurativa stages (n=50)

Stages	Surgical Excision	Botulin Toxin Injection
	No. of patients (%)	No. of patients (%)
Stage I	15 (60.0%)	18 (72.0%)
Stage II	8 (32.0%)	6 (24.0%)
Stage III	2 (8.0%)	1 (4.0%)
p-value	0.185**	

* Significant, ** not significant

Table No.2: Recurrence of Hidradenitis suppurativa (n=50)

Stages	Surgical Excision	Wide	Botulin Toxin Injection
	No. of patients (%)		No. of patients (%)
Stage I	0 (0.0%)		0 (0.0%)
Stage II	0 (0.0%)		2 (33.34%)
Stage III	1 (50.0%)		1 (100.0%)
Total	1 (4.0%)		3 (12.0%)
p-value	0.001*		

* Significant, ** not significant

Table No.3: Patient satisfaction (n=50)

Stages	Surgical Excision	Wide	Botulin Toxin Injection
	No. of patients (%)		No. of patients (%)
Stage I	13 (86.67%)		18 (100.0%)
Stage II	6 (75.0%)		4 (66.67%)
Stage III	0 (0.0%)		0 (0.0%)
Total	19 (76.0%)		22 (88.0%)
p-value	0.03*		

* Significant, ** not significant

Distribution of patient with Hidradenitis suppurativa stages are shown in Table I. The most common stage of Hidradenitis suppurativa was stage I i.e. 48.0% followed by stage II (28.0%) and stage III (6.0%). Overall recurrence was seen in 1 (4.0%) patients after surgical excision and in 3 (12.0%) patients wide excision

and Botulin Toxin Injection, respectively (p-value = 0.001, hence significant). The overall patient 22 (88.0%) patients were satisfied with Botulin Toxin Injection treatment and 19 (76.0%) with surgical excision (p-value = 0.001, hence significant). The details of recurrence of Hidradenitis suppurativa and patient satisfaction are shown in table 2 and 3, respectively.

DISCUSSION

This study was conducted on the surgical and botulin toxin injection treatments of Hidradenitis suppurativa disease which included 50 cases. In our study the mean age of the patients with Hidradenitis suppurativa were 28.69 ± 5.61 and 29.11 ± 5.17 years in group I and II, respectively. There were 18 (72.0%) males and 7 (28.0%) females in group I and 19 males 97.6.0% males and 6 (24.0%) females in group II in our study. The male to female ratio was 1:2.8.

In our study, the mean body mass indexes were 31.14 ± 2.78 and 32.01 ± 1.98 Kg/m² in group I and II, respectively. In a case report by Feito-Rodriguez et al, body mass index was 16.5kg/m².¹⁵

The sites of hidradenitis suppurativa were axilla in 82.0% patients and groin in 18.0% patients in our study. In a case report by Reilly DJ et al, the disease was involving the groin region.¹⁴ However, we included all the cases with axillary involvement.

The most common stage of Hidradenitis suppurativa was stage I i.e. 48.0% followed by stage II (28.0%) and stage III (6.0%) in our study.

In our study, recurrence was not observed in any patient (0.0%) in stage I & II underwent surgical wide excision, however recurrence was 50.0% in patients with stage III hidradenitis suppurative after surgical excision. In our study, recurrence rate was 100.0% in patients with stage III hidradenitis suppurativa, 33.34% in stage II and 0.0% in stage I hidradenitis suppurativa after treatment with Botulin Toxin Injection.

The overall recurrence was 4.0% in patients who underwent surgical wide excision for hidradenitis suppurativa in our study. Higher recurrence rate i.e. 12.0% was observed in patients of hidradenitis suppurativa, treated with Botulin Toxin Injection in our study. Reilly DJ et al, reported a case of successful treatment of botulin toxin injection treatment of hidradenitis suppurativa in a young female.¹⁴ Feito-Rodriguez et al reported a case of hidradenitis suppurativa in prepubertal female that was successfully treated with botulinum toxin A injection.¹⁵ O'Reilly et al also reported a case of successful treatment of botulin toxin injection in a middle aged female with groin and axillary hidradenitis suppurativa.¹⁶

The overall satisfaction rate was higher in botulinum toxin group as compared to surgery. This high satisfaction rate may be attributed to fear of surgery among patients, which however was not assessed in our

study. A hundred percent satisfaction rate with botulinum toxin injection group in stage I disease patients makes it more favorable. However, the cost for the treatment is still very high in a developing country like Pakistan. But, this cost may be comparable to the cost of surgery which includes the cost of procedure and aftercare as well.

In our study, none of the patients with stage I hidradenitis suppurativa showed recurrence. So, it can be interpreted that botulinum toxin can be advised to the patients with stage I hidradenitis suppurativa who are reluctant for surgical treatment as a first line treatment. The higher rates of recurrence in both groups of treatment for stage III disease reflects that still there is need of more innovative treatment options for hidradenitis suppurative.

This study has certain limitations. It was a single center study based on experience of single surgeon. All the surgical procedures were performed by a single surgeon. Although it was a randomized trial, it was not a double blinded study because of the nature of the treatment in both cases was different. However, we did randomization of the patients by lottery method.

CONCLUSION

It is concluded that the surgical excision of hidradenitis suppurativa was found superior to Botulin toxin injection treatment in terms of recurrence but botulinum toxin had an edge over surgery in terms of satisfaction.

Author's Contribution:

Concept & Design of Study:	Muhammad Usman
Drafting:	Seemab Khan
Data Analysis:	Muhammad Saad Faisal
Revisiting Critically:	Muhammad Usman, Seemab Khan
Final Approval of version:	Muhammad Usman

Conflict of Interest: The study has no conflict of interest to declare by any author.

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