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***Original Research Article***

# Effectiveness of Intralesional Steroid Injections in Peyronie's Disease

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**Abstract:** *Peyronie's disease (PD) is a progressive fibrotic disorder characterised by penile curvature, plaque formation, pain, and erectile dysfunction, significantly impacting patients' quality of life. Various treatment modalities, including intralesional steroid injections, have been explored to manage PD, but their efficacy remains a subject of investigation.* ***Objective:*** *This observational study aimed to evaluate the effectiveness of intralesional steroid injections in treating Peyronie's disease.* ***Methods:*** *This observational study was conducted from January 2023 to December 2024, involving 101 male patients aged between 20 and 65. All patients were diagnosed with Peyronie's disease based on clinical evaluation and medical history. Participants were treated with intralesional steroid injections administered every four weeks for a total of three sessions. Pre- and post-treatment assessments included measurements of penile curvature, plaque size, erectile function using the International Index of Erectile Function (IIEF), and pain levels using a visual analogue scale (VAS). The primary outcomes were changes in penile curvature, erectile function, plaque size and pain relief, with follow-up evaluations conducted after each treatment cycle.* ***Results:*** *Out of the 101 patients, 75.2% experienced improvements in penile curvature, and 61.4% showed a reduction in plaque size. Additionally, 64.4% of participants reported pain relief, and 77.2% exhibited improvements in erectile function, as measured by the IIEF score.* ***Conclusion:*** *Intralesional steroid injections were found to be effective in reducing penile curvature, plaque size, and pain, as well as improving erectile function in patients with Peyronie's disease.*

**Keywords:** Peyronie's Disease, Intralesional Steroid Injections, Penile Curvature, Plaque Size, Erectile Function, Pain Relief, Non-Surgical Treatment

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## Introduction

Peyronie's disease (PD) was initially documented in a clinical series concerning penile curvature is a fibrotic condition of the tunica albuginea that leads to curvature of the penis (1). The condition has significant impacts on both the physical and psychological aspects of men's sexual health. PD appears as a collection of symptoms, including penile deformity accompanied by pain during erection and even an inability to penetrate the vagina. This condition can lead to a decline in self-esteem, depression, and a diminished quality of life (2, 3). The estimated prevalence of PD varies substantially, ranging from 0.39% to 13.1% across various ethnic groups (4). PD has been a focal point of discussion; however, the precise pathophysiology and aetiology remain unclear. PD is a complex condition marked by the development of an atypical fibrous plaque in the tunica albuginea, which is accompanied by fibroblastic proliferation and changes in the elastin substructure.PD is suggested to be an atypical healing reaction to repeated microtrauma to the penis that takes place during sexual intercourse. The development of PD in a limited number of individuals remains ambiguous even though penile microtrauma is observed in all active sexual men. Additional factors examined in the development of PD encompass genetic profile, hypogonadism, cigarette smoking, as well as inflammatory conditions of the genital tract (5, 6).

The treatment approach for PD includes proper counselling, medical treatments, minimally invasive techniques, and surgical options. Spontaneous plaque resolution has been observed in 13% to 40% of PD patients, highlighting the importance of comprehensive counselling about the disease's progression, potential curvature improvement, pain management, restoration of erectile function, and the various treatment choices, along with their effectiveness (7-9). Intralesional delivery of hypo-proliferating agents, such as collagenase, verapamil, steroids, interferon (IFN)-α2b, and numerous currently under evaluation (10, 11). Intralesional collagenase enzyme Clostridium histolyticum is a newly approved agent for treating PD. The decision for surgical intervention is influenced by the patient's erectile function, the presence of penile deformity, the characteristics of the plaque, and the choices of the surgeon. Although many treatment options exist, insufficient high-quality research exists to establish a definitive consensus (12).

This investigation seeks to evaluate the efficacy of intra-lesional steroid injections in treating PD, focusing on the results obtained. Considering the limited data on long-term outcomes and the variability in treatment responses, it is essential to gather more definitive evidence regarding the role of steroid injections as a therapeutic strategy. This could offer a valuable treatment option for patients with mild to moderate PD, particularly for those who are not suitable candidates for surgery or who prefer less invasive alternatives.

## Methodology

This observational study was undertaken in the Burn and Plastic Surgery Center Peshawar, Urology & Plastic Surgery Departments of Lady Reading Hospital, Institute of Kidney Diseases Hayatabad Peshawar and Urology Department DHQ, Kohat. From January 2023 to December 2024, 101 patients were diagnosed with Peyronie's disease. The criteria for inclusion in the study were as follows: Men aged 20 to 65 years with a confirmed diagnosis of Peyronie's disease, established through physical examination and medical history. Individuals with a history of previous penile operations, significant comorbidities, or other disorders that could affect treatment outcomes were excluded. Furthermore, patients receiving therapy for Peyronie's disease at recruitment were excluded from the

study.

Upon enrollment, each patient had a comprehensive clinical assessment. This involved a thorough physical examination to evaluate the extent of penile curvature and the existence of any discernible plaques. Penile curvature was quantified with a protractor during a pharmacologically induced artificial erection. The dimensions of the plaques were assessed using physical examination and, when required, ultrasound imaging to guarantee precise measurement. The severity of erectile dysfunction was assessed utilising the International Index of Erectile Function (IIEF). At the same time, patients were offered subjective evaluations of their pain levels using a visual analogue scale (VAS).The trial participants were administered intralesional steroid injections at the location of the penile plaque. The injections were given at four-week intervals, totalling three sessions per patient. The steroid administered by injections was a frequently prescribed corticosteroid. The selection of corticosteroids was informed by established clinical standards and previous studies demonstrating its efficacy in diminishing inflammation and plaque size. Following each injection, patients were observed for any immediate adverse effects or problems, including pain, oedema, or erythema at the injection site.Follow-up assessments were performed every four weeks after each injection session, during which measures of penile curvature, plaque dimensions, and erectile function were reiterated. Furthermore, patients were requested to disclose any alterations in pain intensity and any enhancements in sexual function. The IIEF scores were subsequently documented after the therapy program. The primary outcome measures included improvements in penile curvature, plaque dimensions, pain alleviation, and overall satisfaction with sexual function, evaluated through both subjective and objective assessments.Objective metrics, including alterations in penile curvature and plaque dimensions, were evaluated with conventional statistical techniques. Subjective outcomes, including pain alleviation and enhancements in sexual function, were assessed by patient-reported outcome measures. The assessment tools comprised the Visual Analog Scale (VAS) for pain and the International Index of Erectile Function (IIEF) score for erectile function. Descriptive statistics were employed to describe demographic and clinical characteristics utilising SPSS 24.

## Results

The study included 101 patients with a mean age of 42.58 years (±13.16). The mean BMI was 26.90 kg/m² (±1.90). The demographic characteristics of the participants showed that a majority, 54 (53.5%)**,** were uneducated, while 47 (46.5%) were educated. Regarding employment, 63 (62.4%) participants were unemployed, whereas 38 (37.6%) were employed. A significant portion of the participants, 63 (62.4%), resided in rural areas, while 38 (37.6%) were from urban areas. Regarding socioeconomic status, 60 (59.4%) were from middle-income households, 24 (23.8%) were from lower-income families, and 17 (16.8%) were from upper-income households.

When examining the age distribution of the participants, the group was primarily composed of individuals aged between 36 and 50, with 39 (38.6%) participants in this range. Those aged 20 to 35 comprised 30 (29.7%), while 32 (31.7%) participants were between 51 and 65**.**

In terms of comorbidities**,** 28 (27.7%) of the participants had hypertension, 25 (24.8%) had diabetes, and 8 (7.9%) had heart disease, with the rest of the participants being free from these conditions.

The effectiveness of intralesional steroid injections was assessed in various aspects. Of the patients, 76 (75.2%) showed improved penile curvature, while 25 (24.8%) did not. Regarding the size of the plaques, 62 (61.4%) of the patients experienced a reduction, and 39 (38.6%) showed no improvement. Regarding pain reduction, 65 (64.4%) reported decreased pain, while 36 (35.6%) did not experience any significant change. The International Index of Erectile Function (IIEF) score showed an improvement in 78 (77.2%) of the participants, with 23 (22.8%) showing no change.

**Table 1: Demographic profile of the patients**

| Demographics features | | N | % |
|---|---|---|---|
| Education status | Educated | 47 | 46.5% |
| | Uneducated | 54 | 53.5% |
| Employment status | Employed | 38 | 37.6% |
| | Unemployed | 63 | 62.4% |
| Residence area | Rural | 63 | 62.4% |
| | Urban | 38 | 37.6% |
| Socioeconomic status | Upper | 17 | 16.8% |
| | Middle | 60 | 59.4% |
| | Lower | 24 | 23.8% |

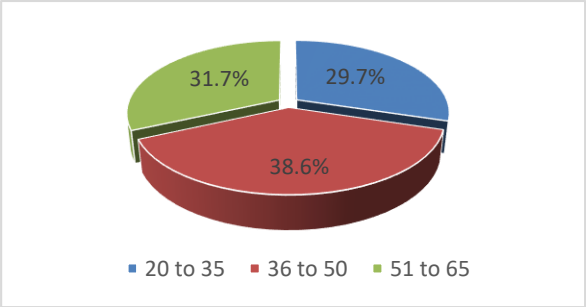


**Figure 1: Age distribution of the patients (Years)**

**Table 2: Comorbidities**

| Comorbidities | | N | % |
|---|---|---|---|
| Hypertension | Yes | 28 | 27.7% |
| | No | 73 | 72.3% |
| Diabetes | Yes | 25 | 24.8% |
| | No | 76 | 75.2% |
| Heart disease | Yes | 8 | 7.9% |
| | No | 93 | 92.1% |

**Table 3: Effectiveness of intralesional steroids**

| Effectiveness | | N | % |
|---|---|---|---|
| Improvement in penile curvature | Yes | 76 | 75.2% |
| | No | 25 | 24.8% |
| Improvement in plaque size | Yes | 62 | 61.4% |
| | No | 39 | 38.6% |
| Reduction in pain | Yes | 65 | 64.4% |
| | No | 36 | 35.6% |
| Improvement in IIEF score | Yes | 78 | 77.2% |
| | No | 23 | 22.8% |

## Discussion

In our study, a significant portion of patients reported positive responses to treatment, with 75.2% experiencing improvements in penile curvature, 61.4% showing a reduction in plaque size, 64.4% reporting pain relief, and 77.2% demonstrating improvements in their International Index of Erectile Function (IIEF) score.

These findings align with a study by Raghupathi S et al. on the combination therapy of triamcinolone, hyaluronidase, and mitomycin, which showed that 71.4% of patients had improvement in penile curvature, and 66.6% saw reductions in plaque size (13). These results are pretty similar to the findings of our study, indicating that intralesional injections are an effective treatment for PD. Furthermore, the improvement observed in the IIEF scores in our study (77.2%) is consistent with Zucchi A et al. on hyaluronic acid injections, which reported significant increases in IIEF scores and improvements in sexual satisfaction (14).

Regarding comorbidities, our study found that 27.7% of patients had hypertension, 24.8% had diabetes, and 7.9% had heart disease. These

figures are comparable to the findings of Saleh B et al., who noted a high prevalence of diabetes and erectile dysfunction (ED) in PD patients, which can complicate the management of the disease (15). It is essential to consider this when assessing the effectiveness and safety of intralesional steroid treatments, as comorbid conditions can influence the overall outcomes and side effect profiles of such therapies.

Our study also supports the notion that intralesional steroid injections are a viable treatment option, consistent with other studies that have explored intralesional therapies for PD. Studies like those by Chong W et al. and Khooblall P et al. have highlighted the therapeutic benefit of intralesional agents such as collagenase, verapamil, and steroids in managing PD (16, 17). These therapies have been shown to reduce plaque size, alleviate pain, and improve penile curvature, which are outcomes that were similarly observed in our study.

Furthermore, our results regarding the reduction in plaque size and penile curvature align with the existing body of research. For instance, Zucchi et al. showed that intralesional hyaluronic acid therapy significantly reduced plaque size and penile curvature. The encouraging results seen in our study support the effectiveness of intralesional injections in treating PD, especially during the active phase of the disease when inflammation is still present (14).

Our study emphasises the beneficial results linked to intralesional steroid injections; however, it is crucial to acknowledge that additional research has assessed the safety and effectiveness of various intralesional agents. Saleh B et al., regarding Verapamil injections, highlighted notable enhancements in penile curvature and pain alleviation (15). Additionally, investigations by Khooblall P et al. and El-Sakka AI have explored the broader application of intralesional therapies, such as collagenase clostridium histolyticum (CCH) and verapamil, in individuals with more advanced cases of PD (17,18).

## Conclusion

In conclusion, our study's findings indicate that intralesional steroid injections are a beneficial intervention for Peyronie's disease, leading to notable enhancements in penile curvature, plaque sizes, pain alleviation, and erectile performance. Nonetheless, additional investigation and extended monitoring are essential to assess these enhancements' durability and gain a clearer insight into the risks of prolonged administration of intralesional steroids.

## Declarations

**Data Availability statement**

All data generated or analysed during the study are included in the manuscript.

**Ethics approval and consent to participate**

Approved by the department concerned. (IRBEC-MMNCS-0331d-24)

**Consent for publication**

Approved

**Funding**

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## Conflict of interest

The authors declared the absence of a conflict of interest.

## Author Contribution

***EA (Registrar), MZH (Medical Officer)***
*Manuscript drafting, Study Design,*
*Review of Literature, Data entry, Data analysis, and drafting article.*
***IU (Associate Professor), NM (Medical Officer), NM***
*Conception of Study, Development of Research Methodology Design, Study Design, manuscript review, critical input.*
*All authors reviewed the results and approved the final version of the manuscript. They are also accountable for the integrity of the study.*

## References

1. Di Maida F, Cito G, Lambertini L, Valastro F, Morelli G, Mari A, et al. The natural history of Peyronie's disease. World J Men Health. 2021;39(3):399.
2. Nelson CJ, Diblasio C, Kendirci M, Hellstrom W, Guhring P, Mulhall JP. The chronology of depression and distress in men with Peyronie's disease. J Sex Med. 2008;5(8):1985-90.
3. Hartzell R. Psychosexual symptoms and treatment of Peyronie's disease within a collaborative care model. Medicine. 2014;2(4):168-77.
4. DiBenedetti DB, Nguyen D, Zografos L, Ziemiecki R, Zhou X. A Population-Based Study of Peyronie′ s Disease: Prevalence and Treatment Patterns in the United States. Adv Urol. 2011;2011(1):282503.
5. Gonzalez-Cadavid NF, Rajfer J. Mechanisms of disease: new insights into the cellular and molecular pathology of Peyronie's disease. Nat Clin Pract Urol. 2005;2(6):291-7.
6. Inal T, Tokatli Z, Akand M, Özdiler E, Yaman Ö. Effect of intralesional interferon-alpha 2b combined with oral vitamin E for treatment of early-stage Peyronie's disease: a randomised and prospective study. Urology. 2006;67(5):1038-42.
7. Gelbard MK, Dorey F, James K. The natural history of Peyronie's disease. J Urol. 1990;144(6):1376-9.
8. Chung PH, Han TM, Rudnik B, Das AK. Peyronie's disease: what do we know and how do we treat it? Can J Urol. 2020;27(3):11-9.
9. Sharma KL, Alom M, Trost L. The aetiology of Peyronie's disease: pathogenesis and genetic contributions. Med Rev. 2020;8(2):314-23.
10. Gelbard M, Lipshultz LI, Tursi J, Smith T, Kaufman G, Levine LA. Phase 2b study of the clinical efficacy and safety of collagenase Clostridium histolyticum in patients with Peyronie disease. J Urol. 2012;187(6):2268-74.
11. Lipshultz LI, Goldstein I, Seftel AD, Kaufman GJ, Smith TM, Tursi JP, et al. Clinical efficacy of collagenase Clostridium histolyticum in treating Peyronie's disease by subgroup: results from two large, double-blind, randomised, placebo-controlled, phase III studies. BJU Int. 2015;116(4):650-6.
12. Hatzimouratidis K, Eardley I, Giuliano F, Hatzichristou D, Moncada I, Salonia A, et al. EAU guidelines on penile curvature. Eur Urol. 2012;62(3):543-52.
13. Raghupathi S, Raghavendra R. The study of short-term efficacy of intralesional injection of a combination of triamcinolone, hyaluronidase, and mitomycin in Peyronie's disease. Int Surg J. 2019;6(1):183-187.
14. Zucchi A, Costantini E, Cai T, et al. Intralesional injection of hyaluronic acid in patients affected with Peyronie's disease: preliminary results from a prospective, multicenter, pilot study. Sex Med. 2016;4:e85-e90.
15. Saleh B, Dallash M, Koura M, Ibrahim M. Efficacy and Safety of Verapamil Intralesional Injection in Peyronie's Disease Using the Kalsi Technique. Clin Surg. 2024; 9.;3680.
16. Chong W, Tan RBW. Injectable therapy for Peyronie's disease. Transl Androl Urol. 2016;5(3):310-317.
17. Khooblall P, Bole R, Lundy SD, et al. Expanded utilisation of intralesional therapies for the treatment of Peyronie's disease. Research and Reports in Urology. 2023;15:205-216.
18. El-Sakka AI. Medical, non-invasive, and minimally invasive treatment for Peyronie's disease: A systematic review. Andrology. 2021;9:511–528.