

Case – Central serous retinopathy following topical intraurethral corticosteroid use for urethral stricture secondary to lichen sclerosus

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INTRODUCTION

Urethral stricture is a large component of reconstructive urology practice, with urethral reconstruction considered the gold standard of treatment due to high overall success rates. Up to 20% of urethral strictures are known to be caused by lichen sclerosus (LS), a chronic inflammatory disease of the genitals in which urethral tissue also demonstrates increased inflammation when compared to non-LS strictures.¹ The post-urethroplasty recurrence rates for LS-related strictures are up to 71% in published literature, which is far from ideal.²

Due to high urethroplasty failure rate, conservative management has recently been a significant part of the LS treatment discussion. Intraurethral clobetasol propionate 0.05% applied via intermittent catheterization demonstrates 85-90% success, defined as not progressing to urethroplasty.² Regimen typically comprises catheterized application twice daily for as long as 2-3 months, then decreasing usage to as needed.¹ This often includes external application to glans and genital skin, as patients commonly have itching and dysuria, with affected skin developing loss of color in blotches.¹ Less effective treatment alternatives include tacrolimus, topical testosterone or calcineurin inhibitors, and oral acitretin.¹ None of the alternatives have been

KEY MESSAGES

- Lichen sclerosus-related urethral stricture has high urethroplasty recurrence rate, making conservative treatment with topical glucocorticosteroids increasingly common.
- A serious, although rare, visual complication known as central serous chorioretinopathy has been associated with glucocorticosteroid use.
- Treatment for central serous chorioretinopathy includes discontinuing corticosteroids ideally without steroid re-challenge due to possible recurrence; this leaves only surgical treatments, with poor outcomes for these patients.

studied regarding intraurethral application in LS-related stricture. In addition to treating symptoms and evaluating for urethral stricture, monitoring LS patients is important because of increased risk to develop penile squamous cell carcinoma.¹

We present a case of a young male treated with clobetasol catheterization for LS who developed a rare but serious visual complication of topical glucocorticosteroid use. As there is no urologic literature regarding correlation of intraurethral LS treatment and ophthalmic problems, we feel it important to make the urologic community aware of this potential adverse reaction. This case also highlights the challenges in treating this difficult disease process and the lack of alternatives.

CASE REPORT

Our patient’s urologic history began at age 20 years with weak stream. After multifocal stricture diagnosis at an outside institution, he underwent multiple endoscopic procedures before undergoing buccal graft urethroplasty in 2014. Afterwards, he performed monthly intermittent catheterization for continued weak stream. He was also treated for ventral glans irritation with steroid cream, antifungal cream, and topical antibiotics.

Upon initial visit to our reconstructive urology clinic in 2020 at age 34 years, the patient’s circumcised phallus had meatal stenosis and visible irritation of subcoronal ventral penile skin. Cystoscopy with retrograde urethrogram revealed panurethral stricture extending from meatus to proximal bulbar urethra, consistent with LS. That year, he underwent extended meatotomy with repeat urethroplasty using buccal mucosa and post-auricular grafts. He was voiding well one year later.

By early 2022, the patient returned to clinic after treatment by dermatology for cutaneous penile LS with clobetasol followed by tacrolimus. In late 2022, at 37 years of age and just over 2 years following repeat urethral reconstruction, the patient began performing meatal intermittent catheterization with clobetasol for recurrence of meatal stenosis. He continued to have ventral coronal tissue which remained periodically irritated despite topical treatments, so we biopsied the inferior urethral meatus; this resulted as LS without malignant changes.

In late 2022, the patient began having vision problems with his left eye. Specifically, he reports developing a sudden onset of a “dark spot” in his left eye in December 2022. Over the next few days, the “dark spot” progressively increased in size and was accompanied by the development of blurry vision. Finally, he then began to develop a sensation of “darkened” vision as well as left eye “pressure” that prompted his visit to neuro-ophthalmologist. It was at this time that he was diagnosed central serous chorioretinopathy (CSC). He then returned to his dermatologist, who recommended discontinuing clobetasol and replacing with a calcineurin inhibitor. The patient then contacted urology for recommendations.

A multi-disciplinary decision to remain off topical steroid or other anti-inflammatory therapy was then made. Over the ensuing months, the patient’s symptoms gradually improved.

By about two to three months after his last dose of topical clobetasol, his vision returned to baseline with no residual symptoms or deficits.

DISCUSSION

Because we were not aware of the association between topical steroids and CSC, we performed an extensive literature search. To our knowledge, there have been no accounts published relating CSC to intraurethral corticosteroids or LS.

CSC is characterized by fluid collection beneath the retina, causing serous retinal detachment, and often presents as a unilateral central blind spot in vision.^{3,4} Retinal imaging via fluorescein angiography or optical coherence tomography confirms diagnosis.⁵ Unlike most other retinal conditions, CSC is most common in young and middle-aged adults.⁴

Multiple hypotheses exist regarding pathophysiology, including choroidal vascular hyperpermeability or retinal pigment epithelium dysfunction causing a change in fluid movement toward the retina.⁶ Although most associations are limited by sample size and confounders, some risk factors have been identified.⁷ Males are 6 times more likely to have idiopathic CSC.⁴ Other factors include hypertension, gastroesophageal reflux, Cushing’s, diabetes, pregnancy, stress, Type A personality, alcohol, and certain medications including psychotropic drugs.^{3,7}

Corticosteroid use is strongly associated with CSC; these cases do not appear to have a higher male sex predilection.^{3,4} Corticosteroid associations were first noted in case reports in the 1960s.³ Several larger studies were eventually completed, with all but one demonstrating a link between steroids and CSC.³ Most commonly, route of administration is oral.⁴

Reports relating CSC to topical steroid use did not appear in literature until the mid-2000s, and research remains limited and anecdotal.³ Most cases have been reported in patients with multiple or large sites of application for lichen planus, psoriasis, seborrheic dermatitis, and pityriasis versicolor.⁵

CSC is typically self-limited, but 1/3 or more of patients will have recurrence and poorer prognosis.³ It will usually resolve with discontinuation of steroid. There are reports of repeat recurrence with steroid challenge.^{5,8} When CSC persists >3 months, positive results have been attained with laser, photodynamic therapy, and medications including mineralocorticoid antagonists and topical NSAIDs.^{4,8}

If patients cannot discontinue steroids, reducing dose can speed resolution.³ When the cause is topical steroid use for dermal conditions, patients can try lower potency steroids or topical calcineurin inhibitors.⁴ Topical steroids have potencies increasing by Group, from 1-7, with 1 being most potent.⁸ Group 1 includes 0.05% clobetasol propionate, commonly used in LS treatment.

Systemic absorption may be increased by poor tissue in certain skin conditions and by steroids containing the solvent propylene glycol (such as clobetasol propionate), which has been suggested to increase tissue permeability.⁵ Interestingly, some believe corticosteroid-related CSC

may not be related to increasing doses of steroids but instead to inducing a response in vulnerable individuals.^{4,5,6}

In urologic literature, CSC has recently been associated with ertafitinib use in urothelial carcinoma, typically relieved by decreasing or discontinuing use.^{9,10} There are also several reports of CSC associated with sildenafil and tadalafil, with most cases resolving after discontinuation.^{11,12,13,14,15}

Our patient may have increased vulnerability to CSC from glucocorticosteroid use. He is young and takes medication for attention deficit disorder and gastroesophageal reflux. Systemic absorption of topical steroid may be increased by poor LS tissue and the solvent in clobetasol preparation. He also used sildenafil in the past although not in a while.

Clobetasol has been discontinued. He is now expectantly managing his LS-related meatal stenosis, but this will likely recur. We will need a plan in place that avoids steroids when this happens. To avoid a re-challenge, this only leaves surgical options with low success rates.

CONCLUSIONS

It is important that urologists are aware of CSC and the association of corticosteroids given increasing use in the LS population. We were also made aware of CSC's association to the common erectile dysfunction medications sildenafil and tadalafil. However, while we have several alternative to treat erectile dysfunction, the challenge in management of urethral stricture in the setting of LS provides particular difficulty.

REFERENCES

1. Chung ASJ, Suarez OA. Current treatment of lichen sclerosus and stricture. *World J Urol.* 2020 Dec;38(12):3061-3067. doi: 10.1007/s00345-019-03030-z. PMID: 31807846. <https://doi.org/10.1007/s00345-019-03030-z>
2. Rozanski AT, Zhang LT, Muise AC, et al. Conservative management of lichen sclerosus male urethral strictures: a multi-institutional experience. *Urology.* 2021 Jun;152:123-128. doi: 10.1016/j.urology.2021.01.010. PMID:33482126. <https://doi.org/10.1016/j.urology.2021.01.010>
3. Nicholson BP, Atchison E, Idris AA, et al. Central serous chorioretinopathy and glucocorticoids: an update on evidence for association. *Surv Ophthalmol.* 2018 Jan-Feb;63(1):1-8. doi: 10.1016/j.survophthal.2017.06.008. PMID: 28673727. <https://doi.org/10.1016/j.survophthal.2017.06.008>
4. Hilton T, DeCrescenzo A, Menter A, et al. Topical dermal steroid-induced retinopathy. *JAAD Case Rep.* 2020 Jul 17;6(9):868-870. doi: 10.1016/j.jdc.2020.07.015. PMID: 32875037; PMCID: PMC7452288. <https://doi.org/10.1016/j.jdc.2020.07.015>
5. Chan LY, Adam RS, Adam DN. Localized topical steroid use and central serous retinopathy. *J Dermatolog Treat.* 2016 Oct;27(5):425-6. doi: 10.3109/09546634.2015.1136049. PMID: 26822912. <https://doi.org/10.3109/09546634.2015.1136049>
6. Ranno S, Fontanel L, Ruggiero E, et al. Central serous chorioretinopathy in a 14-year-old atopic boy: a case report. *Ital J Pediatr.* 2023 Jan 3;49(1):1. doi: 10.1186/s13052-022-01386-4. PMID: 36597009; PMCID: PMC9808962. <https://doi.org/10.1186/s13052-022-01386-4>
7. Zhou M, Bakri SJ, Pershing S. Risk factors for incident central serous retinopathy: case-control analysis of a US national managed care population. *Br J Ophthalmol.* 2019 Dec;103(12):1784-1788. doi: 10.1136/bjophthalmol-2018-313050. PMID: 30872284. <https://doi.org/10.1136/bjophthalmol-2018-313050>
8. O'Brien P, Young RC, Ghafoori SD, et al. Central serous retinopathy associated with topical oral corticosteroid use: a case report. *J Med Case Rep.* 2019 Jul 2;13(1):201. doi: 10.1186/s13256-019-2143-3. PMID: 31262360; PMCID: PMC6604175. <https://doi.org/10.1186/s13256-019-2143-3>
9. Claiborne RT, Tsan GL. Case report: erdafitinib-induced central serous chorioretinopathy. *Optom Vis Sci.* 2022 Jan 1;99(1):88-92. doi: 10.1097/OPX.0000000000001833. PMID: 34882600. <https://doi.org/10.1097/OPX.0000000000001833>
10. Roubal K, Myint ZW, Kolesar JM. Erdafitinib: A novel therapy for FGFR-mutated urothelial cancer. *Am J Health Syst Pharm.* 2020 Feb 19;77(5):346-351. doi: 10.1093/ajhp/zxz329. PMID: 32073123. <https://doi.org/10.1093/ajhp/zxz329>
11. Alsarhani A, Alarfaj M, Alhoutan K, et al. Central serous chorioretinopathy associated with tadalafil. *Case Rep Ophthalmol.* 2022 Nov 28;13(3):999-1002. doi: 10.1159/000527356. PMID: 36605047; PMCID: PMC9808129. <https://doi.org/10.1159/000527356>

12. Fraunfelder FW, Fraunfelder FT. Central serous chorioretinopathy associated with sildenafil. *Retina*. 2008 Apr;28(4):606-9. doi: 10.1097/IAE.0b013e31815ec2c8. PMID: 18398363. <https://doi.org/10.1097/IAE.0b013e31815ec2c8>
13. Gordon-Bennett P, Rimmer T. Central serous chorioretinopathy following oral tadalafil. *Eye (Lond)*. 2012 Jan;26(1):168-9. doi: 10.1038/eye.2011.250. PMID: 22056864; PMCID: PMC3259586. <https://doi.org/10.1038/eye.2011.250>
14. Moschos MM, Nitoda E. Pathophysiology of visual disorders induced by phosphodiesterase inhibitors in the treatment of erectile dysfunction. *Drug Des Devel Ther*. 2016 Oct 19;8:3407-3413. doi: 10.2147/DDDT.S118015. PMID: 27799745; PMCID: PMC5076796. <https://doi.org/10.2147/DDDT.S118015>
15. Türkçü FM, Yüksel H, Şahin A, et al. Central serous chorioretinopathy due to tadalafil use. *Int Ophthalmol*. 2013 Apr;33(2):177-80. doi: 10.1007/s10792-012-9646-x. PMID: 23065016. <https://doi.org/10.1007/s10792-012-9646-x>

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