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Clinical Research Paper

Home removal of Firlit Kluge stents and hypospadias dressing after distal hypospadias repair in day surgical unit: A single centre experience

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ABSTRACT

Introduction: In this study, we present our single-centre experience using the Firlit Kluge (FK) stent with Duoderm and Tegaderm dressings removed at home on day 6 post-procedure for patients with distal hypospadias. Caregivers were provided with an information leaflet containing instructions for analgesia. This approach eliminates the need for hospital readmission for stent and dressing removal, streamlining the postoperative process for both patients and caregivers, while also reducing the workload of nursing staff.

Methods: We retrospectively reviewed medical notes of all patients who underwent surgical correction of distal hypospadias using FK stent with Duoderm and Tegaderm dressings removed at home by caregivers between September 2022 and September 2024. All procedures were performed by a single surgeon. We analysed patient age, type of procedure, hospital stay, early postoperative complications, issues with home stent and dressing removal, and 30-day readmissions.

Results: A total of 37 male patients were included; median age was 25 months (range 18–39 months). 35 (94.6 %) patients underwent Mathieu repair and 2 (5.4 %) underwent Snodgrass repair. Three patients (8.1 %) required a ward review before day 6 post-op due to stent dislodgement; no reinsertion of the catheter was required, and the dressing was not redone. All patients urinated without problems. 35 patients were treated as day cases, and only 2 patients stayed overnight, both due to late procedure completion. No urethrocutaneous fistula was observed.

Conclusion: The use of an FK stent with Duoderm and Tegaderm dressings, safely removed at home by caregivers, appears feasible and effective in paediatric hypospadias repair. Caregivers reported no difficulties and children tolerated the procedure well. This practice reduces hospital readmissions, simplifies postoperative care, and may improve the overall patient and caregiver experience. Further studies with larger patient cohorts are needed to confirm these findings.

1. Introduction

Distal hypospadias repair can be performed using a variety of techniques, which are broadly classified as stented or non-stented approaches. The use of a urethral stent may provide support for neo-urethral healing and help to minimise postoperative discomfort. However, current literature lacks strong evidence comparing surgical outcomes between stented and non-stented repairs. Stent-related complications such as blockage, kinking, dislodgement, bladder discomfort, and the need for additional hospital visits must also be considered [1,2].

At our centre, we use an urethral stent non-potty-trained boys undergoing distal hypospadias repair, allowing caregivers to remove dressings at home. We also explore the experience of using this method at our centre and the impact it has had on our practice.

This study aimed to evaluate the feasibility, early safety, and practicality of caregiver-led home removal of urethral stents and dressings after distal hypospadias repair, and to assess its impact on patient comfort and family experience.

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2. Methods

This was a single-centre retrospective case series conducted at a paediatric urology unit within a tertiary children's hospital. Only primary distal hypospadias repairs were included; redo or proximal hypospadias cases were excluded. All patients were non−potty-trained.

This study was conducted as a service evaluation in accordance with institutional governance policy and did not require formal Research Ethics Committee approval.

Data were retrieved from the hospital's electronic medical record system for all patients who underwent distal hypospadias repair with an FK stent between September 2022 and September 2024. The following variables were reviewed: patient age, surgical technique, length of hospital stay, early postoperative complications (bleeding, stent blockage, or dislodgement before discharge), issues with home stent or dressing removal, and readmissions within 30 days.

The Firlit−Kluge stent (8 Fr) was inserted during the procedure, cut to approximately three times the penile shaft length, and secured with Duoderm and Tegaderm dressings (Figs. 1 and 2). The stent and dressing were planned to be removed together on postoperative day 6.

Prophylactic therapy with trimethoprim (2 mg/kg once daily) was prescribed. Caregivers were instructed to immerse the child in a warm bath for 30 min, after which the dressing would detach easily, allowing gentle removal of the catheter. Parents were advised to contact the ward or attend A&E in case of any concerns. Early complications were defined as those occurring before discharge. Postoperative problems were identified through parent phone calls or unscheduled ward/A&E visits.

3. Results

Our database search identified 37 male patients who underwent a distal hypospadias repair using a urethral stent with Duoderm and Tegaderm dressings (Picture 1 and 2).

Median age 25 months (range 18−39). All patients underwent a single-stage Mathieu or Snodgrass procedure, with 35 (94.6 %) patients undergoing the former and 2 (5.4 %) patients undergoing the latter.

All 37 included patients were planned day case procedures, and none had any immediate early operative complications (in 4 h post procedure), with only 2 patients requiring an overnight stay post-procedure due to late finish.

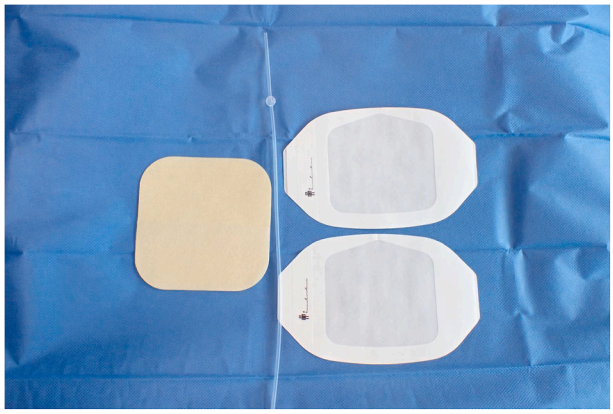

Fig. 1. Duoderm, two tegaderms and Firlit Kluge Stent used for the dressing.

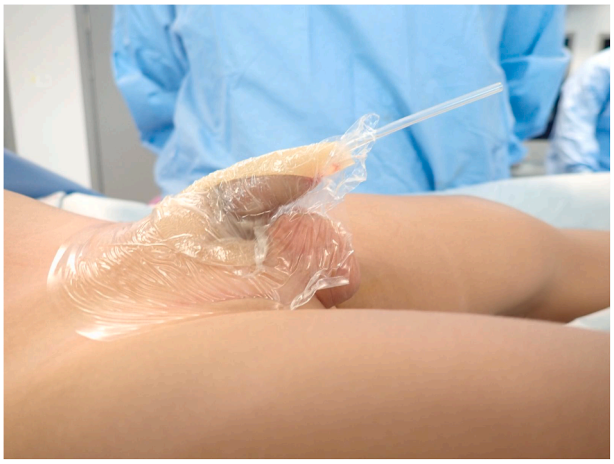

Fig. 2. Dressing.

Only 3 (8.1 %) had dislodgement of their stent requiring a ward review prior to the stent removal on day 6, with 1 occurring on day 2 and two occurring on day 3 and days 4 post-procedure. All 3 patients who required a ward review had a favourable outcome on subsequent follow-up, which had no significant effect on complications vs patients whose stents remained in situ for the full 6 days.

For the remaining 34 patients, where the stent remained in situ for the full 6 days, there was no reported problems with the home stent and dressing removal process, and none of these patients required admission for in hospital removal. The minimum follow-up was 1 year, with patients routinely reviewed at 1 month postoperatively, then at 6 months, and annually thereafter.

4. Discussion

Following hypospadias repair, most centres continue to use a urethral stent or Foley catheter to divert urine away from the repair site, provide support to the reconstruction, and minimise pain during voiding in the early postoperative period [3,4]. Conventional full-length stents extend into the bladder, which can lead to discomfort and bladder spasms, often necessitating anticholinergic therapy [3,4]. They also require in-hospital removal, which can be distressing for children and families and increases the use of healthcare resources [4,5].

Mid-urethral stents have been proposed as an alternative to reduce bladder-related discomfort and have shown successful outcomes in the literature [6]. However, they remain at risk of premature dislodgement, especially in the early postoperative days [6]. In contrast, our technique utilises the Firlit−Kluge (FK) stent, which is externally secured with Duoderm and Tegaderm dressings and does not extend into the bladder [7,8]. This method provides stable anchoring without sutures while maintaining secure postoperative drainage [7,8].

A key feature of our approach is the home-based stent and dressing removal protocol. This allows removal on postoperative day 6 without the need for a hospital visit. Families are instructed to perform removal after a warm bath, which softens the dressings and facilitates easy detachment. This process was well tolerated, with no reports of significant complications or readmissions related to home removal in our series. Parents appreciated the convenience and reduced stress of avoiding an additional hospital visit.

From a service perspective, enabling home removal optimises healthcare resource utilisation, reducing outpatient or day-case demands in an already stretched system. It also enhances the overall family experience by minimising disruption to daily routines. Our findings suggest that the FK stent with home removal is feasible and safe in routine practice, with low complication rates and positive parental feedback [9].

Compared with previously described mid-urethral stents, the FK technique may reduce the risk of premature dislodgement and bladder-related discomfort, while potentially simplifying postoperative care. These observations suggest a possible advantage of externally secured stents in selected cases of distal hypospadias repair.

5. Conclusion

The use of a Firlit Kluge stent with Duoderm and Tegaderm dressings, removed at home by caregivers, has proven to be a safe and practical option in the postoperative management of distal hypospadias. It reduces numbers of hospital visits, and offers a more comfortable recovery in a familiar environment.

Although this is a single-centre study with a limited number of patients and without formal caregiver feedback, the results are encouraging and suggest that this approach can be effectively integrated into routine clinical practice. Further studies could help confirm its broader applicability and long-term benefits.

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