

## Original Research Article

# Complete occlusive dressing for hypospadias in children

Tanvir Roshan Khan\*, Shrikesh Singh, Divya Prakash

Department of Paediatric Surgery, Dr. RML Institute of Medical Sciences, Gomtinagar, Lucknow, Uttar Pradesh, India

**Received:** 25 February 2021

**Revised:** 08 April 2021

**Accepted:** 14 April 2021

**\*Correspondence:**

Dr. Tanvir Roshan Khan,

E-mail: [trkrml.lko@gmail.com](mailto:trkrml.lko@gmail.com)

**Copyright:** © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

### ABSTRACT

**Background:** Dressing after hypospadias repair is particularly important to provide adequate pressure, hemostasis and prevent edema. Ideal dressing remains a challenge and multiple methods of dressings after hypospadias repair have been reported. Not many types of dressings are described in children and it varies from places and institutes. Present study describes the method of application of complete occlusive dressing in the children undergoing hypospadias repair.

**Methods:** It is a prospective analysis of the operated patients of hypospadias who were offered complete occlusive dressing of the penis following surgery in a tertiary teaching hospital. The outcome was assessed on the basis of cosmetic and functional appearance after removal of the dressing namely, edema, ischemia, fistula formation if any

**Results:** A total of 100 patients were operated during the study period of two years. The age ranged from 1 year to 16 years. All patients were provided complete occlusive dressing of the penis following surgery (urethroplasty). The patients tolerated the dressing very well with minimal postoperative edema with good functional and cosmetic outcome. There were some minor complications associated with this type of dressing.

**Conclusions:** The complete occlusive dressing in the hypospadias surgery is an alternative type of dressing in children after hypospadias surgery. The dressing is easily available, and the method can be easily learned and reproduced. There is no need for repeated changes or pain on removal, the patients are comfortable with the dressing and it keeps them mobile. It is helpful in reducing the postoperative edema and subsequent complications.

### INTRODUCTION

Various kinds of penile dressings after the hypospadias repair are described in literature with an aim to reduce the postoperative edema by maintaining the hemostatic pressure, simultaneously maintaining the phallus in the upright position and its non-rotation.

Ideal dressing remains a challenge and multiple methods of dressings after hypospadias repair have been reported. Not many types of dressings are described in children and it varies from places and institutes.

Any dressing that provides adequate hemostatic pressure, keep the phallus upright and prevent the postoperative

edema along with minimizing the movement of the organ will improve the outcome in hypospadias surgery. Potential disadvantages of various dressings include ischemia, infection and pain during dressing removal.<sup>1</sup>

The present study is a prospective study of the application of the complete occlusive dressing in 100 consecutive cases of hypospadias repairs.

The study describes the method of application of the complete occlusive dressing in the hypospadias repair in children and its benefits in the form of improved outcome with lesser postoperative complications. Although primarily applied to the paediatric age group the method is easy to learn and can be applied to adult age group.

## METHODS

A prospective study was conducted in the department of paediatric surgery of this tertiary teaching hospital between January 2018 to December 2019, in cases diagnosed with hypospadias. Total 100 patients were included in the study.

### *Inclusion criteria*

Inclusion criteria included all children diagnosed to have hypospadias with or without other associated anomalies.

### *Exclusion criteria*

Patients with glandular hypospadias and those requiring hypospadias fistula closure surgery.

The patients were evaluated in the outpatient's department and a record was made for the age of presentation, type of hypospadias, any associated anomalies, any previous operation. All patients were operated on the elective basis after explaining the procedure and informed consent was taken.

The sample size estimation and the statistical analysis were done by UCSF sample size calculators for designing clinical research.

Ethical committee approval was obtained from institutional ethical committee.

### *Procedure*

The patients were encouraged to take bath and maintain hygiene till the date of surgery. All patients were operated in general anesthesia with caudal block. The most commonly method of urethroplasty utilized were TIP urethroplasty (tubularized incised plate urethroplasty) and Bracka's two stage repair of hypospadias. After completion of urethroplasty, the neourethral coverage was provided by dartos flap and in few cases by tunica vaginalis flap.

The wound was liberally washed with normal saline while maintaining the haemostasis by the tourniquet. After the wash a thick layer of antiseptic cream of framycetin was applied fully over the phallus and gauze pieces were applied still maintaining the haemostasis.

While maintaining the manual compression over the gauze pieces the tourniquet is removed and the dynaplast was applied circumferentially all over the phallus maintaining a gentle compression as shown in figures 1-3. The Infant feeding tube no. 7-8 were used for urethral stenting and was fixed with same dynaplast, avoiding the kinking at any place and connected to urobag.

A single IV antibiotic (ceftriaxone) was given for 5 days and paracetamol was given for pain. The patients were

encouraged for mobilization and were able to walk with catheter. Postoperatively the dressing was maintained for 7 days and on 8<sup>th</sup> day the dressing was removed along with the stent and passage of urinary stream was confirmed before discharge. The patients were advised sitz bath postoperatively for one week for the wound edema and oral anti-inflammatory for further 5 days.

All patients were called after one week, two weeks and one month for follow-up after discharge. Urethral caliberation if required was done in outpatient department on weekly basis. All patients are being followed up till now or communicating on telephone.



**Figure 1: Antibiotic ointment applied after.**



**Figure 2: Gauze pieces applied to cover the hypospadias repair.**



**Figure 3: Complete occlusive dressing applied.**

## RESULTS

A total of 100 patients were operated during the study period. All patients were operated by a qualified paediatric surgeon. The age ranged from 1 year to 16 years, with majority of the patients were under 5 years.

The most common type of hypospadias was Distal penile type (61%) and there were two patients who were already circumcised at the time of presentation. Three patients were already operated elsewhere and had dehiscence and recurrence. (Table 1).

**Table 1: Types of hypospadias.**

Type of hypospadias	Number	Percentage
<b>Distal Hypospadias</b>	61	61
<b>Mid penile hypospadias</b>	21	21
<b>Proximal hypospadias</b>	13	13
<b>Circumcised hypospadias</b>	2	2
<b>Redo</b>	3	3

The most common surgical procedure was TIP urethroplasty followed by Bracka's two stage urethroplasty. Twelve patients had some associated anomalies that were treated on individual basis (Table 2).

**Table 2: Associated anomalies.**

Associated anomaly	Number	Management
<b>Undescended testes</b>	3(Left in 2 and Right sided in 1)	Orchiopexy was done in all before hypospadias repair
<b>Penoscrotal transposition</b>	3	Correction was done before hypospadias repair in one case.
<b>Penile torsion</b>	2	Corrected along with hypospadias repair
<b>Inguinal hernia</b>	2	Repair done before TIP
<b>VUR</b>	1	Waiting for reimplantation
<b>Anorectal malformation</b>	1	Colostomy followed by PSARP done before TIP.

All patients tolerated the total occlusive dressing very well and were able to walk with the catheter next day and the parents were satisfied with the complete coverage of the wound. The attending nurses and the residents were aware of the problems like kinking and subsequent soakage of the dressing.

There were 2 episodes of the redness and itching around the dressing that were managed by oral antiallergics. In 6 patients the dressing got soaked in the postoperative period leading to apprehension among the parents. The soakage however was relieved by correcting the kink of the urethral stents in 4 patients and repeated flushing of the catheter in 2 patients. In all these cases the dressing was maintained till 7<sup>th</sup> postoperative day after which it was removed.

There was no change of the dressings till its removal. In one of the cases the dressing got dislodged in the

immediate postoperative period which was again applied with the patient in sedation, while in one case it got dislodged on 3<sup>rd</sup> day after surgery which was then reinforced in the ward itself. Other complications were procedure related and given in Table 3.

The dressing needed saline soaking at the edges for easy removal and was removed along with the stent and the patient can pass urine immediately after that. There was some amount of post-operative edema of the wound in all cases and it subsided with sitz (warm saline) baths. Six patients had urethro- cutaneous fistula in the post-operative period, while meatal stenosis was found in 9 cases. None of the patients had ischemia or dehiscence of the wound (Table 3).

**Table 3: Complications.**

Complication	Number	Management
<b>Procedure related</b>		
Urethro cutaneous fistula	6	Layered closure 4 Layered closure+glandsplasty in 2 coronal fistulae
Recurrence of fistula	1	Redo urethroplasty
Meatal stenosis	9	Meatal caliberation
Residual chordee/rotation	1	Followed-up
Dehiscence	0	-
<b>Dressing related</b>		
Allergic reaction at the dressing site	2	Oral antiallergics
Soakage of the dressing	6	Correction of kinking of the urethral stent 4. Flushing of the stent block 2.
Slippage of the dressing	2	Reinforcement

## DISCUSSION

A hypospadias dressing should control postoperative edema, prevent hematoma formation that predisposes to infection, as it works as a barrier from the surroundings.<sup>2</sup>

Different types of materials have been used for this purpose, including petrolatum-based gauze, silastic foam, elastic bandage, glove finger, Tegaderm™, Opsite®, Cavi-Care®, Granuflex®, Dermolite™, and Coban™ bandage. All the above-mentioned materials have their own set of advantages and disadvantages.<sup>3</sup>

All preformed dressings available in the market add financial burden to the already resource starved centres specially at public sector hospitals. In view of easy availability and extremely low cost of the dressing

materials already available we applied complete occlusive dressing in all of the patients of hypospadias.

It comprised of an antiseptic ointment, few gauze pieces and a roll of dynaplast (elastic adhesive bandage). The whole dressing cost is around three dollars and is easily available and needs no special training for its application. It firmly secures the wound and prevents external injury to the urethroplasty while maintaining adequate pressure further decreasing the edema and facilitating the wound healing. The phallus thus wrapped in this dressing is not dangling and restricted in movement, thus further helping the urethroplasty leading to better healing.

The complete occlusive dressing described by the authors can be applied in all types of hypospadias and was even helpful in three cases of two stage repairs. The hypospadias cases with inner preputial free graft were very well secured with this dressing and the graft well taken up in these cases and the repair was complete in two stages. The dressing however was not used in patients with glandular hypospadias.

Although there is always a question about the vascularity of the wound and the phallus especially as this dressing does not allow to see the tip of the glans. The authors however did not find a single case of glanular ischaemia or dehiscence in any of the cases operated. There were more incidences of postoperative edema in the early part of the study due to the fear of the same problem, however gradually we learned to how much pressure is needed to firmly secure the dressing and meanwhile the vascularity is maintained.

Our dressing in hypospadias although is bulky and may look uncomfortable, but it prevents the post-operative edema very well (Figure 4) and needs little attention by the caregivers.



**Figure 4: Immediate result after removal of dressing.**

The patient can be mobilised next day and the risk of postoperative touching and rubbing is obviated. A pubmed search for the dressing used in the hypospadias repair leads to various studies utilising the different

materials. There are different views about postoperative dressings.<sup>4</sup>

Appropriate pressure is needed for post-operative dressing in hypospadias as excessive pressure in hypospadias dressing may compromise the blood supply of flap and skin which may lead to tissue necrosis while no pressure may lead to hematoma, edema, and infection increasing the number of complications.<sup>5</sup> In our study, dressing provides adequate pressure to reduce the edema and prevents both complications.

Some authors described a unique tri-laminate structure, dressing for hypospadias.<sup>6</sup> It is nonadherent, easy to apply and removable without pain or distress to the patient on 5<sup>th</sup> day and there were no early wound infections.<sup>7</sup>

A wet dressing is described as multi-perforated pellicle that, when applied around the penis, protects the surgical field. This multi-perforated tape can involve several times the penis shaft and due to its adhesiveness, it hardly loosens. The Mepilex<sup>®</sup> Border foam sheet dressing is cut according to the penile length and circumference. The lower border of dressing is split in three flaps for self-adherence to pubic and scrotal area claimed to be simple with no previous skills needed for its application.<sup>8</sup>

There are authors who describe a different dressing in surgical repair of paediatric hypospadias, where the penis was wrapped with a silicone mesh netting. Then, the tubular elastic net bandage was put around the penis over the silicone netting. The bandage proved to be well tolerated and effective.<sup>9</sup> The bandage did not need to be changed due to becoming wet during voiding.

Our dressing also got soaked in few patients due to the kinking of the catheter or blockage, however the dressing was not changed, and the cause of soakage was addressed accordingly. The soakage of the dressing did not affect the final outcome.

A randomized control trial was done in 2001 to evaluate the methods of post-operative care of hypospadias. A total of 117 boys completed the prospective randomized trial. The authors concluded that the surgical outcome and the rate of adverse events or complications were not compromised without a postoperative dressing. An absent dressing simplified postoperative ambulatory parent delivered home care. They recommended that dressings should be omitted from the routine use after hypospadias repair.<sup>10</sup> The authors of this paper however differ on this recommendation as the dressing after the hypospadias not only provides an adequate cover to the wound(urethroplasty)with subsequent haemostasis preventing edema, but it also prevents the external soiling.

The total occlusive dressing method utilised in this study was successful in not only eliminating the post-operative



edema and promoting the healing, but it was also to minimise the procedure related complications. It may also be helpful in reducing the postoperative penile erections.

Although the complete occlusive dressing provides improved outcome in hypospadias patients, it is associated with some limitations. The operating surgeon could not see the phallus especially the glans and hence at times worried about the vascularity. The dressing looks bulky and there were few incidences of allergic reactions. There is definitely a learning curve to master the technique when it resulted in an improved outcome of all types of hypospadias repairs in children (Figure 5).



**Figure 5: Outcome of hypospadias repair following occlusive dressing.**

## CONCLUSION

In the present study, we analyzed the effectiveness of the complete occlusive dressing in the children with the hypospadias repairs. This method of dressing is helpful in the management in these patients in the form of reduced postoperative penile edema and providing good immobilization of the urethroplasty repair. The dressing is reliable, can be easily learnt and is inexpensive and provides good functional and cosmetic results. There is no need for repeated changes or pain on removal, the patients are comfortable with the dressing and it keeps them mobile.

## ACKNOWLEDGEMENTS

Authors would like to thank Professor Deepak Bagga, Safdarjung hospital, New Delhi.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: The study was approved by the Institutional Ethics Committee*

## REFERENCES

1. Van SJG, Palanca LG, Slaughenhaupt BL. A prospective randomized trial of dressings versus no dressings for hypospadias repair. *J Urol.* 2000;164(3):981-3.
2. Hosseini SM, Rasekhi AR, Zarenezhad M, Hedjazi A. Cyanoacrylate glue dressing for hypospadias surgery. *N Am J Med Sci.* 2012;4(7):320-2.
3. Méndez GR, García PM, Rodríguez BP, Estévez ME, Carril AL, Bautista CA. A simple dressing for hypospadias surgery in children. *Can Urol Assoc J.* 2017;11(1-2):58-9.
4. Gangopadhyay AN, Sharma S. Peha-haft bandage as a new dressing for pediatric hypospadias repair. *Indian J Plast Surg.* 2005;38:162-4.
5. Singh AP, Shukla AK, Sharma P, Ghosh S. A simple penile dressing following hypospadias repair: our institutional experience. *Nigerian J Plast Surg.* 2016;12:1-3.
6. Fathi K, Tsang T. A technique for applying a non-adherent, tri-laminate dressing for hypospadias repair. *Ann R Coll Surg Engl.* 2009;91(2):164-5.
7. Narci A, Embleton DB, Boyaci EO, Mingir S, Cetinkurşun S. A practical offer for hypospadias dressing: Allevyn®. *Afr J Paediatr Surg.* 2011;8(3):272-4.
8. Martins AG, Lima SV, Araújo LA, Vilar FO, Cavalcante NT. A wet dressing for hypospadias surgery. *Int Braz J Urol.* 2013;39(3):408-13.
9. Wang Y, Li S. The Tubular Elastic Net Bandage: A Useful Penile Dressing in Pediatric Hypospadias. *Indian J Surg.* 2015;77(3):1425-7.
10. Lorie G, Joyner B, Herz D, Callum J, Bagli D, Merguerian P, et al. A prospective randomized clinical trial to evaluate methods of postoperative care of hypospadias. *J Urol.* 2001;165(5):1669-72.

**Cite this article as:** Khan TR, Singh S, Prakash D. Complete occlusive dressing for hypospadias in children. *Int Surg J* 2021;8:1535-9.