Comparison of two method of hydrocele repair in children

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How to cite this article:
Amanollahi O, Ghasem Nejad Z, Samadzadegn A. Comparison of two method of hydrocele repair in children. Iranian Journal of Pediatric Surgery 2019; 5 (1):33-37.

DOI: https://doi.org/10.22037/irjps.v5i1.24177

Abstract

Introduction: Hydroceles is accumulation of fluid in the processus vaginalis (PV) resulting in swelling of the inguinal region or scrotum. Its treatment depends on age, symptoms and conection with abdomen. Preferred method of treatment is subject of debate. in this study we assessed two different method ofhydrocele repair in childrens.hydrocelotomy and hydrocelectomy and compared their complications and recurrences rate.

Materials and Methods: 70 children with noncomunicating hydrocele included in study, allocating every other subject to each treatment group (alternating allocation) for the hydrocelotomy group(incision and evacuation of hydrocele sac)and hydrocelectomygroup(excision and removing of heydrocele sac.The complications and recurrence rate were recorded in both groups and compared together.

Results: From 70 children 25 patient had right side hydrocele(%35/7) and in 45 children hydrocele found in left side.(%64/3). no statistical difference was found for complications like bleeding ,wound infection,spermatic cord damage ,recurrent hydrocele beetween two group in post operation Period

Conclusion: although there not found very different result in rate of complications and recurrency between two group but it seems that hydrocelotomy is enough treatment with less probablity of spermatic cord damage and other complication

Keywords

- hydrocelotomy
- hydrocelectomy
- recurrence

received: 01 February 2019
accepted: 05 March 2019
Published online: 15 June 2019

Introduction

Hydroceles manifest when fluid is accumulated in the processus vaginalis (PV) resulting in swelling of the inguinal region or scrotum.[1]

Ultrasound imaging is very sensitive for diagnosing hydroceles and excluding other differential diagnoses.[2] Apart from the congenital form, hydrocele is the most common complication of any kind of surgery on the testicles such as surgical treatment of varicocele. Optimal treatment of hydrocele is still controversial, yet some believe that noninvasive procedures (scrotal punctures or clinical observation) result in total hydrocele regression in more than 82% of cases.[3]

Treatment of hydrocele can be done either by aspiration which is usually a temporary solution and has a high rate of recurrence or by surgery (hydrocelectomy) which is the definitive management and has a much lower recurrence rate compared to aspiration. Hydrocelectomy may result in complications such as: Excessive bleeding, infection, testicular injury, nerve injury, hydrocele recurrence and Infertility.[4]

Surgical repair of a hydrocele can be done using 3 different approaches: through the groin or using a scrotal incision or it can be done using a laparoscope.[5, 6]

Which method of surgery is more suitable for treatment of hydrocele in children? Excision of hydrocele sac or incision and drainage which is a less invasive method?

In this study we compared these two methods and their complications and recurrence rate.

Materials and Methods

This randomized, single-blind clinical trial was performed between March 2011 and March 2013 in the Kermanshah University of Medical Sciences' Pediatric Surgery Centers (Mohammad Kermanshahi and Emamreza Hospitals), on children with non communicating hydrocele. Patients were between one month and 12 years. Indication of surgery was hydrocele persisting after 18 months or tense and painful hydrocele in younger children. All communicating hydroceles, hydrocele of the spermatic cord and hydrocele with inguinal hernia were excluded from our study. In all, 70 children with non communicating hydrocele were included. We randomly divided patients in to two groups, allocating every other subject to each treatment group (alternating allocation) for the hydrocelotomy group (incision and evacuation of hydrocele sac) and hydrocelectomy group (excision and removing of heydrocele sac). All surgeries were performed by one pediatric surgeon. The parents of all children in the study signed an informed consent form that contained the necessary information. The study was approved by the Ethics Committee of our university. The control group (hydrocelectomy repair) underwent surgery using a groin incision: tunica vaginalis was exposed, opening and evacuation of the hydrocele sac along with partial or complete excision of the sac was performed, hemostasis was maintained and finally repair of the incision site was done. In the study group (hydrocelotomy group) we took the same steps minus excision of the sac (only an incision and wide opening of the sac was done that resulted in hydrocele drainage and evacuation). If a communicating sac was found then the patient would be excluded from the study. All cases in both groups were kept under close observation in

the post-operative period in the hospital, as well as during intermittent outpatient visits in the clinic after discharge. The participants in the study were followed up for several months after discharge. Then the final results, duration of operation time and complications were compared between the two groups. The most important complications such as: recurrence of hydrocele, hemorrhage or hematoma, wound infection and spermatic cord injurywere compared.

All data were obtained using a checklist designed to conduct the study. Finally data analysis was done using SPSS version 16. For quantitative variables we used average and standard deviation. For analysis of qualitative variable, Chi-square test or if needed. The exact Fisher test was used. P value<0/05 was considered significant.

Results

Seventy cases of non-communicating hydrocele underwent surgery between March 2011 and March 2013 in the Pediatric Surgery Centers of Kermanshah University of Medical Sciences (Mohammad Kermanshahi and Emamreza Hospitals).

Thirty five children were in the hydrocelotomy group and 35 children were in the control group (hydrocelectomy method). Twenty five patients had right sided hydrocele (%35/7) and in 45 children hydrocele was found in the left side (%64/3).

We had no case of bleeding in hydrocelotomy group and 1 case of bleeding in hyrocelectomy group (%2/9). No statistical difference was found for bleeding between the two groups (p=0/314). There was one case of wound infection (%2/9) in the study group (hydrocelotomy) and two cases of wound infection (%5/7) in the control group. There was no statistical difference between the two groups regarding this complication(p=0/550). We had zero cases of spermatic cord damage in the study group and one case (%2/9) of inadvertent vas deferens cutting in the control group which was repaired intra-operatively. The difference was not meaningful (p>0/05). There were 3 recurrent hydroceles in the postoperative follow up in the study group (%8/6) and no case of recurrence in the hydrocelectomy group. No meaningful relation was found between recurrence and the method of surgery (p=0/077).

Discussion

There is much controversy regarding the optimal timing of surgery of hydrocele. Since PPV usually closes spontaneously by the age of two; performing hydrocele repair before this age may expose the patient to unnecessary surgery and have significant cost implications. Timing of hydrocele surgery and PPV ligation was the subject of a systematic review in England which showed that most hydroceles resolve before the age of 2 thus if the surgery is postponed until then, less unnecessary procedures will be carried out without increasing morbidity.[7]

In a study by Lym et al. patients who had unilateral hydrocele repair, underwent long-term follow up. They found that the probability of a clinically evident contralateral hydrocele or hernia is only 7%. They came to the conclusion that routine contralateral exploration is not necessary.[8]

In our study we waited until the patients were over 18 month old to perform surgical repair of their hydroceles (except for tense hydroceles which underwent repair earlier). This was in accordance

to a study by Osifo et al.[9]

All our cases were non communicating hydroceles that underwent open surgery. Regarding communicating hydrocele with patent processus vaginalis, although the classic approach in pediatric patients is excision and suture ligation of the indirect sac, different studies have shown that non ligation of the hernia sac does not increase the rate of recurrence.[10] Although all of our patients underwent surgery under general anesthesia, it could be done under local anesthesia as well, elliminating the morbidity of more aggressive anesthetic techniques. This method can be used in smaller departments with limited resources.[11]

Finally we found very limited studies regarding the comparison of two methods of incision or excision of hydrocele sac as treatment of choice in non communicating hydrocele. Considering the fact that incision and drainage of the sac is less invasive and has a lower probability of damage to the spermatic cord elements, we recommend this method.

Conclusion

Although we did not found any difference in the rate of complications and recurrence between the two groups (which could be due to the limited number of our cases) it seems that hydrocelotomy could be enough treatment for pure hydrocele; with a lower probability of spermatic cord damage and other major complications.

Financial Support and Sponsorship

Kermanshah University of Medical Sciences.

Ethics Approval

This study was approved by Ethical Committee of Research Center of Kermanshah University of Medical Sciences with ethical code number of 42513.

Conflicts of interest

There are no conflicts of interest.

Acknowledgement

In the end, our grateful thanks go to all the personnel of Mohammad kermanshahi and Emam reza Hospitals and all patient for their kind support and cooperation.

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