

Do Epididymal Anomalies Affect  
the Index Fertility in Patients with  
Cryptorchidism?Mohamed Jallouli<sup>1</sup>, Rahma Chtourou<sup>1\*</sup>, Hayet Zitouni<sup>1</sup>, Mahdi Ben Dhaou<sup>1</sup>, Tarek Rebai<sup>2</sup> and Riadh Mhiri<sup>1</sup><sup>1</sup>Department of Pediatric Surgery, Hedi Chaker Hospital, Tunisia<sup>2</sup>Histology Laboratory, Faculty of Medicine of Sfax, Tunisia

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## Abstract

**Introduction:** We performed a prospective study to assess the impact of Epididymal anomalies in index fertility of undescended testes comparing to a control group receiving Gonadotropin-Releasing Hormone (GnRH).

**Materials and methods:** Twenty-four boys with cryptorchidism were randomly divided into two groups: Those who were treated with GnRH before Surgery (group1) (n=12) and those who underwent orchidopexy only (group 2) (n=12). During Surgery, the relationship between the testis and epididymis was noted. In both groups, testicular biopsies were obtained and fertility index was determined.

**Results:** Epididymal anomalies were noted in 6 patients of group 1 and 7 patients of group 2. For all patients, there was a statistically significant difference regarding the index fertility between the two groups (p=0.002) (mean of fertility index: 0.88vs 0.49), which wasn't noted in patients with Epididymal anomalies taken separately. For these, fertility index was considerably low compared to patients with normal epididymo-testis structure.

For patients of group1, the mean fertility index was 0.7 in testes with Epididymal anomaly and 1.02 in those with normal epididymo-testis relationship.

**Conclusion:** These data suggests that the fertility impairment in patients with Epididymal anomalies associated with cryptorchidism should be reviewed; other studies with larger sample are needed, obstruction probably do not explain the future fertility in those patients.

## Introduction

Although the relationship between Cryptorchidism and fertility disorders has been widely demonstrated in the literature [1], its pathogenetic mechanisms are still the subject of many studies.

Epididymal fusional anomalies have been then proposed as a possible cause of infertility in Cryptorchidism, since they are very often observed in undescended testes. However, controversy still exists regarding this association.

The aim of our study was to assess the impact of Epididymal anomalies in fertility index of undescended testes, which was calculated and compared between two groups: with and without preoperatively treatment by Gonadotropins-Releasing Hormone (GnRH).

## Patients and Methods

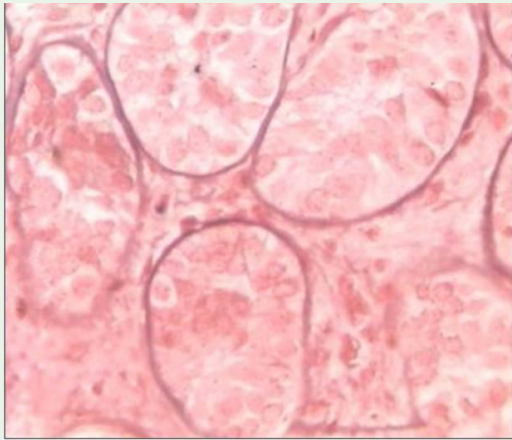
After institutional review board approval and patients' approval, a prospective study was conducted on 24 boys with cryptorchidism.

The inclusion criteria were: complete closure of the processus vaginalis and the presence of the testicle in inguinal position. The exclusion criteria were: bilateral cryptorchidism, retractile testes, previous groin surgery, secondary cryptorchidism, preterm children, hormonal disorders and hormonal pre-treatment.

Patients were randomly grouped under two categories. Patients of group1 received orchiopepy combined with neoadjuvant GnRH therapy as a nasal spray for 4 weeks to 1.2 mg per day (n=12), whereas patients of group 2 underwent orchiopepy alone (n=12).

In the two groups, we designed to clarify the relationship between the testis and the epididymis during surgery. The epididymis and testis were examined and any abnormalities were noted: total non fusion between the epididymis and the testicle was considered abnormal.

In both groups, testicular biopsies were performed during orchiopepy. Each specimen was fixed in Bouin's solution and processed for paraffin embedding. The sections were stained with hematoxylin-eosin and examined under 300 magnifications. Observed fertility indexes were calculated by counting the number of spermatogonia per tubule in 50 tubules examined at 300 magnifications and averaging the results.



**Figure 1:** Histological section in testicle with fusional epididymal anomalies showing few spermatogonia per seminiferous tubules.

Means were statistically compared using chi-square test when applicable. Results were considered to be significant if the *P*-value was less than 0.005.

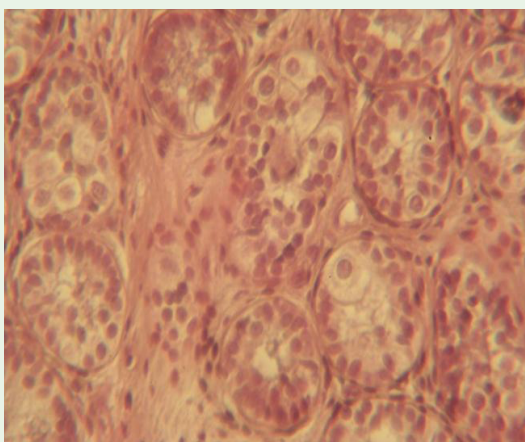
## Results

Patients' ages ranged from 12 to 23 months (average of 34.5 months). The age difference in the two groups was not statistically significant ( $p=0.2$ ), thus guaranteeing comparability.

Epididymo-testis anomalies were noted in 54.1% of cases. Of the 12 patients receiving preoperative intranasal sprays of GnRH, 6 presented Epididymal anomalies. Of the 12 patients undergoing surgery only, 7 had complete epididymo-testis non fusion.

Regardless of the relationship between testicle and epididymis, there was a statistically significant difference regarding the fertility index between the two groups ( $P=0.002$ ) (mean of fertility index: 0.88 in group 1 vs 0.49 in group 2).

When evaluating separately patients with Epididymal anomalies, this difference wasn't ascertained. Furthermore, fertility index was considerably low compared to patients with normal epididymo-testis structure.



**Figure 2:** Histological section in normal testicle showing numerous spermatogonia per seminiferous tubules.

For patients of group 1, the mean fertility index was 0.7 in testes with epididymal anomaly and 1.02 in those with normal epididymo-testis relationship (Figures 1 and 2).

## Discussion

Infertility occurs in from 25 to 100% of subjects affected by cryptorchidism according to the various authors [2]. This involves many factors and depends on whether one or both gonads are concerned and on the age when medical and/or surgical treatment of the condition was begun [7].

The improvement of the fertility index by preoperative hormone therapy had been widely demonstrated in the literature [3-6]. In the current study, preoperative administration of GnRH had, as well, improved the fertility index in undescended testes. However, this rate was very low in testes with epididymal anomalies compared to normal testes, even for patients receiving neoadjuvant hormone therapy. Through these results, we hypothesize that fusional anomalies of the epididymis could have an impact on subsequent fertility in these patients.

Fusion anomalies of the epididymis and testis are associated with undescended testes in 36 to 79% of cases [7,8]. Thus, many authors believed them to be the primary cause for infertility in undescended testes [9], but there is no previous study in the literature to confirm this relationship.

De Grazia, *et al.* [2] had found anomalies concerning the epididymo-testicular relationship in 75% of undescended testes and of these 36% had a definite effect on infertility of the excretory type.

Merkz, *et al.* [10] recorded the association between Epididymal fusional anomalies and high rates of testicular undersize, hypoplasia and flaccidity, which would necessarily entail ultimate lack of fertility.

Contrasting to our data and those previously reported, a recent study led by Kraft Kh, *et al.* [11] noted that degree of testis-epididymis non fusion was not significantly associated with decreased total germ cell or adult dark spermatogonia count.

Certainly, our study is very interesting as it emphasizes the potential association between epididymo-testicular anomalies and future infertility. Such findings may have great clinical significance. They could be a reliable predictor of future infertility and should then be considered when counseling parents. Nevertheless, the main limitation of this work is the small population size. Further larger studies are then necessary to provide more concrete evidence and explanation.

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