Case report

Variant drainage of right testicular vein- a case report

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1. Introduction

The testicular vein drains into inferior vena cava on the right side and left renal vein on the left side. Variation of the right gonadal vein draining in the right renal vein is reported by only a few authors as compared to the left side. Bergman found this variation in 1.5% (4 out of 220 cases) [1]. The knowledge of the normal as well as variation of the testicular vessels has its importance for the surgeons/ nephrologists to prevent any accident. The presence of these variations on the gonadal veins local of drainage is very important to comprehend the origin of varicocele cases, and the recurrence of those after surgery procedures [2]. Duplication of the right testicular vein is of interest for radiologists in avoiding diagnostic errors as well as to surgeons as anomalous veins that ought to be ligated during surgery for varicocele, go unnoticed and result in recurrence of the varicocele which is regarded as the cause of male infertility [3].

Materials and methods

Duplication of right renal vein was noted in a male cadaver during routine dissection for undergraduate students in Government Medical College and Hospital, Chandigarh. After duplication, medial vein was draining into inferior vena cava and lateral vein into right renal vein [fig no 1] whereas on left side, gonadal vein was draining into left renal vein.

Discussion

According to Gay et al. [4], 40% of patients present multiple gonadal veins. According to study done by Raman Gupta et al [5], Occurrence of variations of gonadal veins was found to be common in males and mostly on the left side. Right testicular vein draining into right renal vein rather than inferior vena cava was reported in 2 out of 150 cadavers dissected by Asala et al [6].

The development of gonadal vein is closely related to the development of renal vein and IVC. The embryogenesis of these veins involves the development, regression, anastomosis and replacement of three pairs of venous channels: posterior cardinal, sub-cardinal and supra-cardinal. Anastomosis between the supra-cardinal and the sub-cardinal veins, which occur bilaterally, form the renal segment of IVC [7]. Gonadal vein develops from caudal part of sub-cardinal vein and it drains into the sub-cardinal anastomosis. In the right side, this supra- sub cardinal anastomosis and also a small portion of Sub-cardinal vein are incorporated into the formation of IVC, so right gonadal vein usually drains into the IVC. In the left side, this supra-sub cardinal anastomosis forms part of left renal vein where the left gonadal vein drains [8].

In a study done on gonadal vessels, variations were seen in 21.3% of the cadavers, and were more common on the left side and in 18.8% of cases the variations were present bilaterally [6].

The incidence of duplicated testicular vein may act as additional collateral route. Duques et al presented a single testicular/ovarian vein in 85.2% and double in 8.8% of cases [9]. Presence of duplicated testicular veins has been found to be more common on left side [10, 7]. According to a study [11] double

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testicular veins occurred in 5% of cases in right side while in left side, two veins in 15%, three veins in 2% and four veins in 1% of the cases were reported. In another study [5], the testicular vein showed duplication in 30% cases of left side and in 5% cases of right side. Nayak et al. [12], has found combination of abnormal termination of the right testicular veins in right renal vein and IVC both. Andreas Vesalius, very early, in 1543, also described an almost similar variation, which was a case of bilateral incomplete double right testicular veins terminating in right renal vein and IVC and the left testicular vein terminating in the left renal vein and the lower portion of the IVC [13]. In another case, right testicular vein showed a variant termination in right renal vein instead of inferior vena cava punita.

During laparoscopic surgery of the male abdomen and pelvis many complications occurred due to unfamiliar anatomy in the operative field broho. Awareness of variations of the testicular arteries and veins, such as those shown in this case report, becomes important during such surgical procedures.

It was suggested that the right testicular vein develops from the lower part of the right subcardinal vein. The terminal bifurcation of the right testicular vein might be due to the bifurcation of the right subcardinal vein, during its development as in present case. Functionally this variation might cause confusion in assessing the radiological findings or during retroperitoneal surgeries [12].

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Conclusion

Eventually, our findings have to be kept in mind during surgical procedures in the posterior abdominal wall. The above variations may remain silent clinically and unnoticed until discovered during surgery and autopsy and when present, might increase the possibility of varicocele and infertility in patients. Hence, in-depth knowledge of these developmental anomalies of gonadal veins is important.

References