ABSTRACT: Double ureters are classified either as bifid or duplex.\(^1\) A bifid ureter is commonly found in association with other congenital anomalies and defects. The present case report describes a rare case of isolated bifid ureter. The possible embryological reasons for the formation of bifid ureter are discussed.

KEYWORDS: Ureter, double, anomalies.

INTRODUCTION: Double ureter might be complete or incomplete. Incomplete double ureter is known as bifid ureter. Lowsly et al (1956),\(^2\) reported the incidence of incomplete duplicate ureter to be 18 out of a series of 4215 autopsies studied. Amongst these 2 were bilaterally incomplete duplicate, 7 were unilaterally incomplete duplicate and 8 were unilaterally complete duplicate. According to recent studies of Russel et al (2000)\(^3\) on an average, 3\% excretory urograms show ureteral duplication on routine examination. Presence of bifid ureter is often seen to be associated with congenital hydronephrosis (Angulo et al., 1991),\(^4\) contralateral orthotopic quadrifid ureter (Bhandarker et al., 1997)\(^5\) etc. Here we present a case report with unilateral double ureter.

MATERIALS AND METHODS: In routine mounting of specimens for museum in the Department of Anatomy, a left kidney with double ureter was found. Any other associated anomalies were looked for and the specimen was photographed.

RESULTS: In the present case, the double ureter was found on the kidney of left side. The ureter had two limbs for most of its length. The two limbs of this ureter had their respective pelves coming out as separate entities from the hilus of the kidney, Examination of other parts of the kidney, not showing any abnormality.
Fig. 1: showing the anterior view of left kidney with supra renal gland & hilum showing renal vein, renal artery & two ureters

Fig. 2: showing the hilum of the kidney with arrangement of structures (renal vein, renal artery & two ureters)
**Embryology:** The bifid ureter may be formed due to some Error in development. The ureteric bud arises from the mesonephric duct in 5th week of intra uterine life. The caudal part of Wolffian duct and ureteric bud get in-corporated into the posterior wall of urogenital sinus in 7th week. The concomitant medial rotation results in placing the opening of the ureteric bud above and lateral to that of the Wolffian duct. The ureteric bud grows and penetrates the meta-nephric tissue and subsequently forms renal pelvis which on division gives rise to major and minor calyces.

Thus, the collecting system including ureter, pelvis, major and minor calyces originate from the ureteric bud. However, sometimes the ureteric bud may divide before penetrating the meta-nephric tissue, thus giving rise to a double ureter having a single opening into the bladder. In case of very early division of the ureteric bud, there is incorporation of ureteric division into the posterior aspect of uro-genital sinus which results in double ureter with separate orifices for each.6

**DISCUSSION:** Double ureter had been detected in the past in association with various congenital defects. It has been associated with Goltz’s syndrome (Gunduz et al., 1997)7 high cephalad kidney and duplication of pelvis (Al Attia, 1999), 8 unilateral pulmonary hypoplasia (Prasad et al., 1996).9 Double ureter has also been reported in association with complete duplication of contralateral ureter (Tundidor et al. 1999;).10 Thus, the majority of the investigators have reported this anomaly in association with other disease conditions.
**Clinical importance:**

Double ureters unless symptomatic, might be detected during routine investigations or are incidental findings at autopsy creating academic interest only. Sometimes, there can be features of uretero-ureteric reflux and as a result, uro-lithiasis (Giannokopoulos et al., 1994), pyelo-nephritis and uretero-hydronephrosis (Chalouhy et al., 1992) develop. These complications manifest with symptoms and immediate life-saving interventions are needed.

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CASE REPORT

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