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Spontaneous Resolution of Neonatal Bladder Diverticulum associated with Antenatal Oligohydramnios

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Description

Congenital bladder diverticula are rare findings in neonates and infants and are most often identified in association with bladder outlet obstruction, connective tissue disorders, or neurogenic bladder dysfunction. Isolated bladder diverticula without an identifiable underlying cause are uncommon, and their natural history is not well defined. A male neonate was delivered at 37 weeks of gestation following a pregnancy complicated by oligohydramnios detected during the third trimester. Prenatal ultrasonography suggested a distended fetal bladder but did not demonstrate upper urinary tract dilation. There was no known family history of congenital anomalies or inherited connective tissue disorders.

Soon after birth, the infant developed mild lower abdominal distension and decreased urine output. Physical examination revealed a soft but mildly distended abdomen without palpable masses. The external genitalia were normal, and there were no signs of spinal dysraphism. Initial laboratory investigations, including serum creatinine and electrolytes, were within normal neonatal limits. Renal and bladder ultrasonography demonstrated a large, thin-walled diverticulum arising from the posterior aspect of the bladder. The bladder itself appeared moderately distended, but both kidneys were normal in size and echogenicity, with no evidence of hydronephrosis.

A urethral catheter was placed to decompress the bladder, resulting in immediate improvement in abdominal distension and urine output. A voiding cystourethrogram was subsequently performed to evaluate for bladder outlet obstruction. This study demonstrated a wide-necked posterior bladder diverticulum filling during voiding, with smooth bladder contours and no evidence of posterior urethral valves or vesicoureteral reflux. The urethra appeared normal throughout its course. These findings were confirmed on cystoscopic evaluation, which demonstrated a large diverticular opening but no obstructive lesions or mucosal abnormalities.

Given the absence of outlet obstruction, preserved renal function, and effective bladder emptying following catheter removal, a conservative management strategy was adopted. The family was counseled regarding the potential risks associated with bladder diverticula, including urinary tract infection, stone formation, and progressive bladder dysfunction. Close follow-up with serial imaging and clinical assessment was planned. The infant was discharged home in stable condition without

the need for continuous catheterization.

At one-month follow-up, the infant was voiding spontaneously with no signs of urinary tract infection or abdominal distension. Ultrasonography demonstrated a slight reduction in the size of the diverticulum, with normal bladder wall thickness and continued absence of upper tract dilation. Over the next several months, serial ultrasounds revealed progressive regression of the diverticulum. By three months of age, the diverticulum had decreased by approximately half of its original size. At six months, only a small outpouching remained, and by nine months of age, the diverticulum was no longer detectable on imaging.

Throughout the observation period, the child demonstrated normal growth and development. Renal function remained stable, and no urinary tract infections were documented. Voiding patterns were appropriate for age, with no evidence of urinary retention or incontinence. At one-year follow-up, repeat voiding cystourethrogram was deemed unnecessary due to complete clinical and sonographic resolution.

The spontaneous resolution observed in this case raises important considerations regarding the management of congenital bladder diverticula in neonates. While surgical excision is often recommended for symptomatic diverticula or those associated with obstruction or infection, this case suggests that select patients may benefit from a period of careful observation. In neonates, bladder wall compliance and detrusor function continue to mature postnatally, which may contribute to gradual normalization of bladder anatomy in the absence of fixed obstruction.

The association with antenatal oligohydramnios in this patient is noteworthy. Transient fetal bladder dysfunction or altered voiding dynamics may have contributed to diverticulum formation in utero, with postnatal maturation allowing for subsequent regression. This hypothesis may explain why the diverticulum resolved without intervention once normal voiding patterns were established after birth. However, the precise mechanisms underlying spontaneous resolution remain unclear.

This case highlights the importance of individualized management strategies in pediatric urology. Not all congenital anomalies identified in the neonatal period require immediate surgical correction. Careful patient selection, vigilant follow-up, and clear communication with caregivers are essential when opting for conservative management. Avoiding unnecessary surgery during early infancy may reduce anesthesia-related risks and preserve normal bladder development.

Conclusion

In conclusion, isolated congenital bladder diverticulum may resolve spontaneously in neonates without bladder outlet obstruction or renal compromise. This case supports a conservative approach with close monitoring in selected patients and contributes to the limited literature describing the natural history of this rare condition. Recognition of this potential outcome may help guide clinical decision-making and prevent overtreatment in carefully chosen cases.