

presentation. Those that involve two compartments, namely both middle and posterior cranial fossa, have a bilobed appearance and are typically seen straddling the prepontine cistern, with a dumb-bell shape. This is because both Preganglionic and Ganglionic segments of the V nerve are involved.

Trigeminal Schwannomas: CT features

These middle cranial fossa masses appear typically isodense on noncontrast CT imaging and are seen to enhance substantially with intravenous contrast. CT with bone window settings is best to detect associated expansion, erosion and remodelling of the skull base foramina, with foramen Ovale or Rotundum respectively, showing erosion and enlargement as the Mandibular and the Maxillary divisions of the cranial nerve V exit⁸.

Trigeminal Schwannomas: MR imaging

MR imaging with gadolinium based contrast medium is the investigation of choice for diagnosing these tumors due to the greater contrast resolution and the ability of MR to provide precise anatomic localization of lesions. MR imaging has the advantage of being free from the posterior fossa bone artefacts. On T1 weighted images, Trigeminal schwannomas are seen to be smoothly marginated, isointense to the gray matter; while on T2W and FLAIR images they appear typically hyper intense to the gray matter. Prominent and homogenous enhancement is characteristically seen on gadolinium administration although 70% of larger Schwannomas can show tiny cystic degeneration foci and heterogeneous enhancement⁹. The masses demonstrate a bilobed appearance and seen straddling across the prepontine cistern when they involve both the middle as well as the posterior cranial fossa¹⁰. The absence of any subjacent edema points to their origin from the nerve and not from the cerebral parenchyma. They tend to be somewhat more inhomogenous in appearance compared to Vestibular schwannomas and are more anteriorly located compared to the latter. The Schwannomas that extend from the Gasserion ganglion along one or more divisions of the Trigeminal nerve are called Giant Schwannomas¹¹.

CISS MR imaging has the capacity to visualize the individual cranial nerves and display the exact anatomical location of the mass along the nerve. Diffusion MR demonstrates T2 shine through effect in the form of bright signal on both DW and ADC images.

Diagnosing malignant transformation in these benign tumors is possible by imaging alone. The imaging features that point to malignancy are:- irregular margins of the tumor, extensive nerve involvement, erosion and destruction of the basilar foramina out of proportion in comparison to the size of the tumor, and rapid tumor growth appreciated on serial scans¹².

CONCLUSION

MR and CT imaging both are important to accurately diagnose Trigeminal Schwannomas. MR provides better visualization of the cranial nerves while CT best visualizes the foraminal involvement at the skull base. As these tumors are slow growing and can assume great dimensions before they produce symptoms, MR imaging is of importance in early detection of these tumors. A diagnosis of primary Schwannoma of V nerve must be strongly considered in patients presenting with symptoms of Trigeminal neuralgia or diplopia.

Our first case was a giant Ganglionic and Postganglionic Trigeminal Schwannoma with involvement of both ophthalmic and maxillary divisions of V nerve while the second case was the bilobed Preganglionic and Ganglionic variety of Trigeminal Schwannoma.

REFERENCES

1. Atlas S, *Magnetic Resonance Imaging of the Brain and Spine*. 2nd ed. Lippincott Raven; 1996: 781-6.
2. McNally SP, Rutherford SA, Ramsden RT, Evans DG, King AT. Trigeminal schwannomas *Br J Neurosurg* 2008;22(6):729-38.
3. Honey, Akagi S, Taguchi, et al. Malignant Schwannoma arising in the intracranial trigeminal nerve; a report of an autopsy case and a review of literature *Acta Pathol Jpn* 1990; 40:219-215.
4. Kamel HA, Toland J. Trigeminal nerve anatomy; illustrated using examples of abnormalities *AJRAmJ Raentgenol*, 2001; 176: 247-251.
5. Zhang L, Yang, Shujan X, Wang J et al. Trigeminal Schwannomas. A report of 42 cases and review of the relevant approaches *Clinical Neurol and Neuro Surg* 2009 111(3) 261-269.
6. McCormick PC, Bella JA, Post KD Trigeminal Schwannoma. Surgical series of 14 cases with review of literature *J Neurosurg* 1988 Dec; 69(6); 850-60.
7. Chui M, Tucker W, Hudson A, Bayer N. High resolution CT of Meckel's cave *Neuro radiology* 1985; 27: 403-409.
8. Yuh WT, Wright DC, Barloon TJ, et al. MR imaging of primary tumors of trigeminal nerve and Meckel's cave. *AJR Am J Roentgenol*. 1988; 151(3): 577-82.
9. Rigamonti D, Spetzler RF, Sheller A, Drayer BP. Magnetic resonance imaging and trigeminal schwannoma *Surg Neurol* 1987; 28(1): 67-70.
10. Geutry LR, Tacoboy CG, Turski PA et al. Cerebellopontine angle petromastoid mass lesions; Comparative study of diagnosis with MR imaging and CT. *Radiology* 1987; 162: 513-520.
11. Kouyialis AT, Stranjalis G, Papadogiorgakis N, et al. Giant middle cranial fossa trigeminal schwannoma with extension to the infratemporal and posterior fossa. *Acta Neurochir (Wien)* 2007 149(9):959-63.
12. Stone JA, Cooper U, Castillo M et al. Malignant Schwannoma of the Trigeminal nerve *AJNR* 2001; 22:505-507.

Case Report

Transverse Testicular Ectopia-A Case Report and A Review of Literature.

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Abstract: Transverse testicular ectopia (TTE) in which both testis lie in the same side of the scrotal sac, is a extremely rare anomaly. Per operatively, we made a diagnosis of TTE during inguinal exploration in a patient with right inguinal hernia and left side cryptorchidism. After right inguinal hernioplasty, orchidectomy of the ectopic left testis was done due to its high location in the inguinal canal and inability to mobilize the ectopic testis without jeopardizing its blood supply. Post operatively a search for uro-genital anomalies and karyotyping has done. A review of the literature details: investigative approaches, controversies regarding orchidectomy with orchidopexy, management of persistent Mullerian Duct Anomalies.

INTRODUCTION

Transverse Testicular Ectopia (TTE), also known as Testicular Pseudo – Duplication, Unilateral double testis, Transverse aberrant

testicular maldescent, is an extremely rare congenital anomaly in which both testes descend through the same inguinal canal/ hemiscrotum. It was first reported by von Lenhosek in 1886¹. The patients often

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presents with a symptomatic inguinal hernia (upto 98%) and an impalpable contralateral testis or bilateral cryptorchidism². Few cases admitted with incarceration have been reported³. Often diagnosis is made only during surgical exploration, classically the two testis are identical in size and appearance, each has its own epididymis, vas deferens and testicular vessels⁵. There is no hernia on the side of the undescended testis⁵. The ectopic testis may be located on the inner inguinal ring, in the inguinal canal or in the contralateral hemiscrotum³. Use of laparoscopy during evaluation for impalpable testis, can aid in the diagnosis of TTE, prior to inguinal exploration. Findings such as the vascular supply and vas deferens of the crossed testis being derived from the appropriate and the identification of Mullerian structures can be confirmed by laparoscopy⁵.

In current literature, around 100 cases of TTE have been reported⁴. Persistence of Mullerian duct structures has been reported in 20-49% of cases⁵.

We report our experience with one case of TTE discovered incidentally during surgery for inguinal hernia. The pathogenesis, diagnostic approach and suggested management of TTE are detailed.

CASE REPORT

The patient was a healthy young man of 23 years of age, who was evaluated for a right Inguino-scrotal swelling of 1 year duration. The swelling was noticed incidentally. He was married with no history of sexual dysfunction and has a child.

On clinical examination, the patient had a complete indirect right sided inguinal hernia which was partly reducible. The left hemiscrotum was hypoplastic and no testis or cord palpable in scrotal sac or inguinal canal (Fig. 1). Secondary sexual characters were well developed and the penis was normal.

Patient was posted for elective right side inguinal hernioplasty and left Inguinal/ abdomen exploration for cryptorchidism.

Right inguinal exploration revealed the left ectopic testis near the external inguinal ring within the hernia sac. Further dissection found the normal right testis within the right hemiscrotum. Each testis was noted to have its corresponding spermatic cord, vascular pedicle and vasa deferentia with the two cords fused 4 cm proximal to the testes (Fig. 2). The two testes were a good size and identical in appearance. After right inguinal hernioplasty, the ectopic testis was carefully dissected from the right testis. After double ligation of the its spermatic cord, the ectopic testis was removed. The decision for orchidectomy was reached due to its aberrant location in the inguinal canal and inability to mobilize it into the opposite scrotum.

Postoperatively, biopsy showed a normal testicular structure. An intravenous pyelogram and ultrasonogram (USG) ruled out any urogenital anomalies. His karyotype was 46 XY.



Figure 1: Preoperative view showing the hypoplastic left hemiscrotum and the right inguinal hernia



Figure 2: Operative view during right Inguinal exploration. The two testes with respective epididymides, vasa and blood supply, dissected from the right inguinal canal.

DISCUSSION

The normal descent of a testis occurs in two phases, the intra-

abdominal Phase and inguinoscrotal. The testis first lies in the lumbar region and reaches the scrotum due to various factors. The intra-abdominal descent partly depends on the proper remodeling and consequent shortening of the connective tissue of the gubernaculum. The processus vaginalis aids the inguinoscrotal phase of testicular descent, even though the exact mechanism involved in humans is not clear. In humans, the presence of the testis close to the internal inguinal ring at the appropriate time of development is said to promote the processus vaginalis towards the scrotum⁵.

The embryologic etiology of TTE is controversial³. Several theories such as development of both testis from the same genital ridge (Berg), adhesion and fusion of developing Wolffian canals (Gupta and Das), aberrant gubernaculum (Frey and Rajfer), testicular adhesions, defective formation of the internal inguinal ring (Platii) and traction on a testis by persistent mullerian structures have been suggested⁴. Persistent Mullerian duct syndrome (PMDS) is a rare form of male Pseudo hermaphroditism, characterized by retention of mullerian derivatives in an otherwise normally virilized male⁴. It is characterized by either deficiency of Anti Mullerian Hormone (AMH), AMH receptor mutation or defect in the timing of the release of AMH^{3,5}. The gubernaculum is long and thin resembling the round ligament of the uterus⁵. The long gubernaculum and consequent excessive mobility of the testis predisposes to TTE in patients with PMDS⁵. It also seems possible that the mechanical effect of the persistent mullerian duct structures prevents the testicular descent or leads to both testicles descending toward the same hemiscrotum, producing TTE³.

On the basis of the presence of various associated anomalies, TTE has been classified into three types. Type 1 accompanied by hernia (40-50%). Type 2 accompanied by persistent or rudimentary mullerian duct structures (30%) and type 3 associated with disorders other than persistent mullerian remnants (inguinal hernia, hypospadias, pseudohermaphroditism and scrotal abnormalities (20%)⁴.

Testicular ectopia has been associated with an incidence of upper and lower urinary tract anomalies ranging from 2-97%⁶. Chromosomal anomalies including intersex have been reported⁶. Patients with TTE are at increased risk of malignant transformation with malignancy rates similar to undescended testes⁷. The overall incidence of malignant transformation of gonads is 18%⁴. There have been reports of embryonal carcinoma seminoma, yolk sac tumor, teratoma⁴. There have been at least three documented reports of adenocarcinoma in the mullerian duct remnants of PMDS⁷.

Usually the correct diagnosis is not made before operation. Preoperative diagnosis can be established by USG, computerized tomography, arteriography, venography, magnetic resonance imaging or magnetic resonance venography^{4,6}. Adamsbaum et al recommended routine pelvic and inguinal area USG in bilateral cryptorchidism patients and in patients with inguinal hernia of hard consistency: a homogenous well defined pyriform mass larger than a testis maybe the uterus⁴. When PMDS is suspected karyotyping and HCG stimulation test should be performed to confirm chromosome 46XY and testicular tissue⁴.

Recently with experience of laparoscopic surgery for impalpable testis, both diagnosis and management of TTE and associated anomalies are possible⁵.

Trans-septal orchidopexy or extra-peritoneal transposition of the testis is the treatment of choice³.

Orchidectomy of ectopic testis has been reported by some, because

orchidopexy offers only limited protection against future malignancy if performed after two years of age, most are known to be infertile and the difficulty in separating the gonads and the vas without damage⁷.

If this is necessary on both sides, there is the additional problem of lifelong testosterone substitution which requires efficient patient monitoring and good patient compliance. In cases where this cannot be achieved, compromises, such as temporarily delayed orchidectomy, may be considered.

The surgical management PMDS is still controversial. Due to the risk of malignancy, contrary to previous suggestions^{3,4}, it is now recommended to remove the persistent mullerian derivatives⁷.

The patient or his family should be completely informed of the diagnosis, the surgical options and the need for long-term follow-up as the possibility of infertility and malignant transformation is rather high³. Finally, genetic counseling must be offered to the patient or his parents because of the possible chromosomal origin of the syndrome.

PMDS is usually discovered accidentally during surgical exploration for undescended testis and inguinal hernia repair. Therefore a staged procedure is the most viable option. First procedure includes testicular biopsies, replacement of the testis, uterus and Fallopian tubes in the pelvis and Hernioraphy. After PMDS has been confirmed by investigation definitive surgery can be performed. The vasa deferentia are usually found to be adherent to the lateral walls of the uterus on the removal of Mullerian remnants will damage both the vas deferens

and the blood supply of the testis.

There are no reports of malignancy arising from Mullerian remnants, for these reasons the removal of these structures is no longer recommended. The surgical approach by Guerrier et al bilateral proximal salpingectomies, leaving fimbriae attached to epididymis, corporal hysterectomy and bilateral orchidopexy has been preferred by some teams

CONCLUSION

Surgeons who frequently repair inguinal hernias should be aware of the appropriate surgical management options available to them when this condition is unexpectedly identified during inguinal exploration.

REFERENCES

1. Von Lenhossek MN: *Ectopia testis transversa*. *Anta Anz*. 1: 376 – 381, 1886.
2. Masayuki Takahashi, Yasushi Kurokawa, Ryoichi Nakanishi, Hiroyoshi Nakatsuji: *Laparoscopic Findings of Transverse Testicular Ectopia*, *Urology Volume 71, Issue 3, March 2008, Pages 547.e3-547.e5. doi:10.1016/j.urology.2007.11.045*
3. Duygu Tatli, Kemal Varim Numanoglu : *Transverse testicular ectopia associated with incarcerated inguinal hernia: a case report*, *Cases J*. 2008; 1: 200. doi: 10.1186/1757-1626-1-200.
4. Sahib Naouar, Kais Maazoun, Lassaad Salmoun, Riadh Jouini, Amine Ksia: *Transverse Testicular ectopia: A Three-Case Report and Review of the Literature*, *Urology*. 07/2008; 71(6):1070-3. DOI: 10.1016/j.urology.2007.11.133
5. C.R.Thambidorai, A. Khaleed: *Transverse Testicular ectopia: correlation of embryology with laparoscopic findings*, *Pediatr Surg Int* (2008) 24:371 -374.
6. Young Soo Nam, Hong Kyu Baik, Sun Jin Kim, Hong Ki Lee: *Transverse Testicular Ectopia Found by Preoperative Ultrasonography*: *J Korean Med Sci* 1998; 13: 328-30.
7. Rajshekhar C. Jaka and M. Shankar: *Hernia uterine inguinale with transverse testicular ectopia and mixed germ cell tumor*. *Indian J Urol*. 2007 Jan-Mar; 23(1): 75-76. doi: 10.4103/0970-1591.30274 foration in children. *J Indian Assoc Pediatr Surg* 2010;15(4):139-41.

Case Report

Hamartomatous Duodenal Polyp leading to Duodeno- Jejunal Intussusception – A Rare Case Report.

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Abstract: Intussusception is the invagination of one segment of intestine into another, first described by Barbet of Amsterdam in 1674. Most common variety of intussusception is generally ileo-colic type. We present a case of 30 year old adult male having hamartomatous duodenal polyp leading to duodeno-jejunal intussusception.

CASE REPORT

A 30 year old adult male presented with chief complaints of vomiting and malena for 2 days. There was history of intermittent abdominal distention since 2 months. General physical and per rectal examination was normal. Abdominal examination revealed no palpable mass, abdomen was soft and there was no tenderness or guarding but on percussion liver dullness was obliterated. Erect chest X-ray showed free air under diaphragm. Nasogastric aspiration revealed large amount of bilious fluid. In view of prolonged abdominal distention, high nasogastric aspiration and free air under right dome of diaphragm, patient was taken up for exploratory laparotomy. Exploratory laparotomy revealed a grossly dilated duodenum with multiple diverticuli, multiple polyps in duodenum and jejunum with duodeno-jejunal intussusception (Fig. 1 and 2). Rests of bowel findings were normal.

Patient underwent resection of diseased jejunal segment right up to the DJ

flexure and duodenal jejunal end to side anastomosis. The biopsy of duodenal and jejunal polyp showed Hamartomatous polyp. Postoperative period was uneventful for patient and patient was discharged in satisfactory condition with regular follow up.



Fig. 1: Grossly dilated duodenum with intussusception



Fig. 2: Multiple large polyp

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