

Anaesthetic management of sacrococcygeal teratoma in infants

Sir,

Sacrococcygeal teratomas (SCT), are the most common perinatal germ cell tumours which originate from primordial pluripotent cells.^[1,2] The majority have a sporadic origin occurring with an incidence of 1 in 30,000–40,000 births^[3] with female preponderance.^[4]

We address perioperative management of three patients (Cases I, II, III - aged 6, 4 and 3 months, respectively) for SCT excision. All presented with a progressively increasing swelling in sacral area (7 cm × 8 cm, 8 cm × 9 cm, 10 cm × 11 cm, respectively) since birth [Figure 1]. Cases I and III were of Altman type III (apparent externally but pre-dominantly a pelvic mass extending into the abdomen, Figure 2) and Case II was of type I (pre-dominantly external with minimal presacral component). Case I had polydactyly, Case II had hydronephrosis and Case III had epispadias as associated anomalies. Two large bore intravenous (i.v.) cannula were established. Standard anaesthesia technique was followed in all the cases. After pre-oxygenation and pre-medication with 1 µg/kg fentanyl, the trachea was intubated after induction with injection thiopentone 4–5 mg/kg i.v. and muscle relaxation with injection rocuronium 0.9 mg/kg i.v. Surgery duration exceeded 4 h in all. They were maintained on sevoflurane (0.2–2%) in N₂O:O₂ at 60:40 and top ups of rocuronium. In all the cases, blood loss exceeded the maximum allowable blood loss

(80, 40 and 60 ml, respectively) which was replaced by packed red blood cells (10–15 ml/kg). In Case I, we encountered bradycardia which was atropine-resistant but responded to the removal of traction. At the end of the surgery, trachea could be extubated in Cases I and II. In Case III, since the mass was larger than the other two, excessive blood loss (27% blood volume) manifested despite adequate volume replacement with fluid and blood followed by elective ventilation and extubation 3 h after the surgery. In all the three cases, post-operatively, we provided i.v. paracetamol for pain relief, as intraoperatively caudal block cannot be given due to mass in the sacral region itself.

The multiorgan involvement makes the anaesthetic management challenging. The associated anomalies in SCT include hydrocephalous, spina bifida, cleft lip and cleft palate, polydactyly, transposition of great vessels, neurogenic bladder, hypospadias, epispadias



Figure 1: Lobulated mass in sacrococcygeal region adherent to overlying skin in Case I

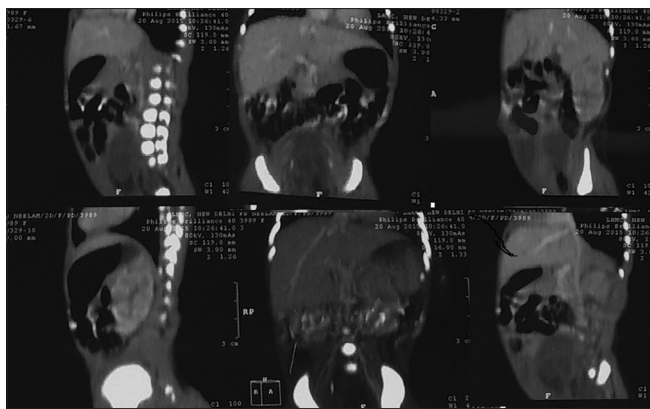


Figure 2: Type III sacrococcygeal teratoma; mass extending inferiorly up to the upper thigh and destroying lower sacral vertebra and coccyx

and ectopic kidney.^[2] Pre-anaesthetic checkup mandates assessment to rule out coagulopathy, renal obstruction by the mass, high output cardiac failure and any neurological deficit. Patients are at respiratory disadvantage due to large abdominal mass pushing the diaphragm and prone position assumed during surgery. Large pelvic venous bed, intratumour arteriovenous fistula and associated coagulopathy accounts to major blood loss and hypovolemic shock in such patients. Smith *et al.*^[4] found that the main blood supply to SCT arises from the median sacral vessels and recommend early ligation of these vessels to avoid excessive blood loss. Meticulous dissection in the avascular plane between the tumour and the normal tissue can prevent excessive blood loss, especially in benign tumours.^[2] Disseminated intravascular coagulation, dilutional coagulopathy and thrombocytopenia from massive transfusion may occur. Long duration of surgery demands close attention to fluid balance and temperature regulation which was taken care of.^[5] Having two saphenous i.v. lines allowed us to give fluid boluses quickly during the periods of haemorrhage. Hypothermia itself worsens coagulopathy and can lead to fatal consequences. Measures adopted to prevent hypothermia in such patients include raising the ambient temperature of operation theatre to 27°C, wrapping the patient with warm blankets, use of radiant warmers, fluid warmers and humidified inspired gas. Another alarming complication is tumour lysis, which can lead to cardiac arrest due to extreme hyperkalaemia.^[6] Surgical injuries include damage to the pelvic nerve, rectum, bladder can lead to bowel and bladder dysfunction in the later course of management.

Thus, early diagnosis, management of intraoperative blood loss, hypothermia, early extubation and post-operative nursing in high dependency unit can bring out favourable outcome.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

**Smaranika Choudhury, Manpreet Kaur,
Maitree Pandey, Aruna Jain**

Department of Anaesthesia and Intensive Care, Lady Hardinge Medical College, New Delhi, India

Address for correspondence:

Dr. Smaranika Choudhury,
Department of Anaesthesia and Intensive Care, Lady Hardinge Medical College and Smt. S.K. Hospital, Shaheed Bhagat Singh Marg, New Delhi - 110 001, India.
E-mail: smaranikach@gmail.com

REFERENCES

1. Isaacs H Jr. Perinatal (fetal and neonatal) germ cell tumors. *J Pediatr Surg* 2004;39:1003-13.
2. Shanbhogue LK, Bianchi A, Doig CM, Gough DC. Management of benign sacrococcygeal teratoma: Reducing morbidity and mortality. *Pediatr Surg Int* 1990;5:40-1.
3. Krishnan S, Solanki R, Sethi SK. Sacrococcygeal teratoma-role of ultrasound in antenatal diagnosis and management. *J Hong Kong Coll Radiol* 2004;7:35-9.
4. Smith B, Passaro E, Clatworthy HW. The vascular anatomy of sacrococcygeal teratomas: Its significance in surgical management. *Surgery* 1960;49:534-9.
5. Abraham E, Parry T, Ghafoor A. Complications with massive sacrococcygeal tumor resection on a premature neonate. *J Anesth* 2010;24:951-4.
6. Jona JZ. Progressive tumor necrosis and lethal hyperkalemia in a neonate with sacrococcygeal teratoma (SCT). *J Perinatol* 1999;19:538-40.

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

Access this article online	
Quick response code	Website: www.ijaweb.org
	DOI: 10.4103/0019-5049.181620

How to cite this article: Choudhury S, Kaur M, Pandey M, Jain A. Anaesthetic management of sacrococcygeal teratoma in infants. *Indian J Anaesth* 2016;60:374-5.