

Anesthesia for separation of conjoined twin a case report

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Abstract

Pygopagus is a rare type of conjoined twins and the incidence is about 6% and these babies are united dorsolaterally in the sacrum and the perineum. Conjoined twins were being separated with increasing frequency and success, concomitant with the improvements being made in the care of pediatric surgical and anesthesiologist team. The conjoined twins which were presented to us for anesthesia were female pygopagus.

They were born on March 21, 2010 in remote village of Sylhet, at home by an uncomplicated vaginal delivery. At birth, the twins were 2.8 kg attached at their back. Their baby was separate organ system except a common anus. The operation was to be performed on the lower intestinal tract and on the nervous system at the same time it was decided to include a neurosurgeon in this team. At the age of 100 days when both weight 5.4 kg general condition was good, two team of surgeon and anesthetist, at beginning operation table two anaesthesia machine with individual monitoring device required preponed. Since surgery was uneventfully. Despite this decision or perhaps even because of it, there was no infection postoperatively. The twins recuperated well from their adventure.

Keywords: Conjoined Twin, Pygopogus.

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Introduction

The first historical reference of conjoined twin may be found in writings of Pliny, but the earliest fully described case is probably that of the Maids of Bidden den in Egypt in 1100¹. The earliest attempt at separation of conjoined twins is recorded as occurring in Armenia in 970AD². To date over 1200 cases of conjoined twins and approximately 250 successful separations in which one or both twins have survived over the long term have been reported. In our country, for the last 10 years, conjoined twins were being separated with increasing frequency and success, concomitant With the improvements being made in the care of pediatric surgical and anesthesiologist team. Pygopagus is a rare type of conjoined twins and the incidence is about 6%³

and these babies are united dorsolaterally in the sacrum and the perineum. The conjoined twins which were presented to us for anesthesia were female pygopagus. They were born on March 21, 2010 in remote village of Sylhet, at home by an uncomplicated vaginal delivery. Their 32years old mother previously gave birth to a normal baby. At birth, the twins were under weight in good general condition, despite the fusion at their back. The combined weight of the twins were 2.8 kilograms, due to firm adherence of the lower part of back to each other, they got admitted in the divisional hospital after 2days of birth. Examination by pediatric and surgical teams revealed that the tiny pygopagus posses a common anus which belonged to the twin on the right (Sabia).



Fig 1



Fig 2



Fig 3



Fig 4

Demonstrated fusion of vertebral (sacro-coccygeal) region up to posterior fourchette, each have individual genito-urinary tract, liver, umbilicus, limbs but have single anus. The two nervous systems seemed nevertheless intact (Fig-1,2 3,4). It was decided that surgical intervention was indicated and a joined meeting with the department of anesthesia and surgery was requested to plan the order of procedure between 3-4 months. The optimal time for separation is 4 and 11 months⁴ later separation presents concerns about the twins, psychological states after separation and in the younger group; organ immunity and accuracy of investigations are factors to consider. Technically for anesthesia, bigger is easier. Operative survival is 50% in the neonatal period compared with 90% if surgery is performed after 4 months of age. This may reflect the severity of the problem, the nature

of the conjunction and, or the need for urgent separation, rather than age of the babies per se⁵.

Planning

Since the operation was to be performed on the lower intestinal tract and on the nervous system at the same time it was decided to include a neurosurgeon in this team. At the age of 100 days when both 5.4 kilogram, general condition was good, two team of surgeon and anesthetist, at beginning one operation table. Two anesthesia machine with individual monitoring device required prepared.

Planning of separation of single anus and vertebral column in one sitting decided. Identification of each child using color coding of equipment, monitoring devices, and limbs and head is very useful at this time.

Anesthetic Technique

1. Personnel. Responsibility for the anesthesia was assigned to two teams of anesthetists; each team consisted of an anesthetist in charge. Anesthesia assistant and trained nurses.

2. Anesthesia : The extent of shared vasculature affects drug pharmacokinetics and pharmacodynamics, as well as fluid and blood administration. Significant cross circulation may confuse and complicate investigations and monitoring. Communication between the two anesthetic teams is vital. Cross circulation may be quantified by studies using contrast media, drug administration, or radio isotope injection into one body and measurement of the uptake in the other baby^{6,7}. As the Sabia (right) and Sadia (left) were lying on their corresponding lateral position, so induction and intubation were very difficult in thus position. Separate drugs, different sizes endotracheal tube laryngoscope with different size blade, mask were prepared. Anesthesia was induced first of all in Sabia by mask with equal parts of oxygen and nitrous oxide and 1.5%– 2% concentration of halothane. An oral endotracheal tube was easily placed without the use of muscle relaxants. The natural lateral positions adopted by the twins allowed intubation without change of position. The other twin Sadia was incubated with some difficulty with the same technique and procedure and drugs. General anesthesia was maintained with the same mixture of oxygen and nitrous oxide supplemented by 0.5% to 1% halothane as required. As muscle relaxants Inj. atracurium was used. The duration of operation was three and half hours, during anesthesia; controlled ventilation was maintained for both the babies.

The intraoperative monitoring for separation of conjoined twins does not differ from any major pediatric surgical procedure. The only differences are that with conjoined twins, all equipments must be double. the room temperature of operation theatre was maintained at 28 c.



Parenteral antibiotics started 24 hours before surgery. We have given Ceftazedime, Metronidazole and flucloxacilline according to body weight in separate infusion line. Antibiotic start Preoperatively and continued up to 7th post operative day.

To follow cardiovascular function, each twin was filled with a pre-cordial stethoscope, child- pulse oxymetry and NIBP.

Initially, adrenal suppression was cited as a common cause of circulatory collapse during separation, leading to a recommendation for peri-operative steroids^{5,8}. Circulatory collapse due to (especially with pelvic bony separation of pygopagus twins) unappreciated blood loss resulting in intravascular insufficiency and undiagnosed cardiac abnormalities are considered. The most complicated monitoring was indispensable for evaluation of the individual blood losses of conjoined twins. Gravimetric evaluation of the blood loss during the separation suggested a total loss of 180ml. This represented 25% of combined blood volumes of the twin. In order to divide the transfusion appropriately, we were obliged to rely on the monitored parameters as observed for each twin. During separation Sabia (right) received 120ml and Sadia (left) 60ml only. After separation, it was much easier to estimate individual losses, Sadia, who under went on anooplasty, lost an additional 80ml, which was replaced, Sabia who possessed their common anus, therefore did not need an anooplasty. She lost only 30ml after separation, and this was also replaced. It is noteworthy that, in totals each twin received 120ml of blood during the operation and that an arbitrary division of blood loss would have given the same result. One must not forget, however, that the timing was very different in the two cases. Sabia received most of her transfusion during separation, whereas Sadia received most of hers after separation. To compensate for insensible losses, each twin received, during the procedure 4 to 5 ml of intravenous fluid (0.225% 1/5 normal saline/kg/hr).

Conclusion

So it is concluded that separation of conjoined twin presents a challenge to the anaesthetist. We believe, however, that only paediatric anesthetist, is well prepared to face this type of situation. The

principal problems we had to a face were the evaluation of the individual blood losses and congestion of the operating room. The presence in the same operating room of two anesthetic teams, two surgical teams with assistant, cameras, all surrounding two tiny twins together 4.6 kilogram certainly might be called, "congestion". If we add to this impressive entourage all the monitoring equipment connected to the two patients, movements became impossible. For the reason closure of the wound was continued after the separation on the same operating room instead of transferring one twin to another suit, as had been originally envisaged. Despite this decision, or perhaps even because of it, there was no infection post-operatively. Infection was feared because of the simultaneous opening of the spinal canal and digestive tract during the same procedure. The twins recuperated well from their adventure and left the hospital June 15,2010 at the age of 115 days.

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