Cardiol Young 2007; 17: 470–471

ISSN 1047-9511
doi: 10.1017/S1047951107000753

Editorial Comment

Ligation of the arterial duct in pre-term babies – where should it be done, and by whom?

Carin van Doorn,[1] Tjark Ebels[2]

[1]Institute of Child Health (University College London) and Great Ormond, Street Hospital for Children, London, United Kingdom; [2]Department of Cardiothoracic Surgery, University Medical Centre Groningen, University of Groningen, The Netherlands

The paper by Sivakumar et al.[1] in this issue of the journal addresses a pertinent issue, namely the effects of an increasing demand for specialist services under circumstances where the provision of these services is limited, and whilst their logistic structure is less than optimal.

The authors describe their experience over a period of 15 years with ligation of the arterial duct in neonates as performed in the intensive care unit by adult cardiac surgeons with specific training and expertise in this procedure. Successful ligation was achieved in all but one of 43 neonates. Of those undergoing ligation, 95% survived for 30 days, although only two-thirds were eventually discharged successfully from hospital. The authors argue that this poor outcome is related to the complications of prematurity, rather than to the surgical procedure, an observation which is also supported by others.[2] They also argue that the results are similar to those achieved in dedicated centres for paediatric cardiothoracic surgery. In spite of these results, they report that there has been a recent change in practice, and that, if needed, pre-term babies are now referred to specialist centres for ligation of their arterial ducts. This has been associated with long waiting times for the operation, and the need to transfer these small sick infants over long distances.

We agree that the current arrangements for ligation of the persistently patent arterial duct in neonates seen in the United Kingdom are unsatisfactory. An important reason has been the inability of the centres for paediatric cardiac services, already overstretched, to accommodate these necessary operations. Since the neonates usually are relatively stable when referred, albeit often ventilator-dependent, they are given low priority, and may have to wait several weeks for their operation. This is not only a waste of precious beds within neonatal intensive care, but also a cause of avoidable morbidity related to pulmonary overflow and complications associated with prolonged stay in intensive care. To the best of our knowledge, the magnitude of this "extra" morbidity has not yet been investigated.

So where, and by whom, should ligation of the arterial duct be performed in pre-term babies? Ideally, the procedure should be carried out in the neonatal intensive care, within the very incubator in which the babies have been nursed. In competent hands, such a procedure is relatively simple, and should take no more than 15 to 30 minutes. Mortality associated with the surgical intervention itself is very low. Who, then, is competent to perform the procedure? The answer to this question goes far beyond the possession of the necessary surgical skills. Over the recent years, catalysed by Inquiry into the happenings at Bristol Royal Infirmary[3], there have been profound changes in professional attitudes towards expected standards of healthcare, in particular for children. Occasional paediatric practice is now unacceptable, and surgery should be concentrated in the hands of appropriately trained and designated surgeons with a commitment to the paediatric surgical sub-speciality, and

Correspondence to: Tjark Ebels, Department of Cardiothoracic Surgery, University Medical Centre Groningen, University of Groningen, The Netherlands. Tel: 0031 (0) 503611719; Fax: 0031 (0) 503611347; E-mail: T.Ebels@thorax.umcg.nl

a workload of sufficient volume to maintain competence[4]. Such considerations have led to a drive for centralisation and specialisation of hospital services, and "occasional surgeons", even those with excellent results, have stopped, or been told to stop, this practice. Unfortunately, the capacity of the existing specialist services has been inadequate to cope with the increased workload, with resultant extended waiting times, and long journeys to tertiary units. The drawbacks of increasing centralisation and specialisation have also become apparent in other areas, not only for paediatric emergencies such as strangulated hernias or fractured limbs with vascular compromise, but also for the more general delivery of health care to rural and remote communities. It has become clear that bigger is not necessarily better, and there is "no one size fits all" for the optimal delivery of health services.

So how can we improve the surgical service for ligation of the patent arterial duct in pre-term babies? An outreach team from a tertiary centre may be the best solution. The team should bring the necessary surgical and anaesthetic skills, as well as competency in echocardiography to verify the cardiac diagnosis. To achieve this aim, a considerable investment in financial and human resources will be necessary, and a considerable disutility will be associated with its organisation, particularly when travelling times are taken into account. The second best alternative might well be to perpetuate the practice so excellently described by Shivakumar and co-authors[1], as long as equally excellent results are produced.

References

1. Shivakumar S, Lee L, Tillett A, Wells F, Dunning J, Kelsall AW. Outcome of ligation of the persistently patent arterial duct in neonates as performed by an outreach surgical team. Cardiol Young 2007; 17: in press.
2. Jacobs JP, Mavroudis ML, Jacobs ML, et al. What is operative mortality? Defining death in a surgical registry database: a report of the STS Congenital Database Taskforce and the Joint EACTSSTS Congenital Database Committee. Ann Thorac Surg 2006; 81: 1937–1941.
3. Learning from Bristol: The report of the public inquiry into children's heart surgery at the Bristol Royal Infirmary 1984–1995. Published July 2001. www.bristol-inquiry.org.uk.
4. Children's Surgery – A First Class Service. Report of the Paediatric Forum of The Royal College of Surgeons of England. May 2000. www.rcseng.ac.uk/rcseng/content/publications/docs/childrens_surgery.