About Perspectives

A perspective on perspectives

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Commentary on Perspectives

The word perspective as a noun can be defined in a number of ways depending on the context in which it is used. Its origin is from the Latin *perspective ars* meaning the ''science of optics''. In the world of art and design, the word is applied to the art of representing three dimensional objects on a two dimensional surface so as to convey the impression of height, width, depth, and relative distance (as defined in *The Oxford English Dictionary*). Other definitions used in more of an interpretative or behavioural sense include ''a view or prospect'', ''a particular way of regarding something'', or ''an understanding of the relative importance of things''. It is this latter definition that is associated with the use of Perspectives to head up a section in this and many other published journals. When consulting the *Little Oxford Dictionary of Quotations*, it is the art context of the word which is illustrated by examples such as: ''*I never saw an ugly thing in my life*: for let the form of an object be what it may—light, shade, and perspective will always make it beautiful''[1] and ''Treat nature in terms of the cylinder, the sphere, the cone, all in perspective''.[2]

So what is the purpose of having Perspectives in *Archives of Disease in Childhood*? The term Commentary has been used previously. However, a written Perspective is something more, as the author should stray beyond merely commenting on the paper in question and view the subject with wide angle lenses. It is a case of providing background and context to the article so that journal readers obtain added value from the original article. This clearly means that Perspective authors have to be chosen not only on the basis of their expertise in the relevant subject area but also for their ability to ''think outside the box'' in order to get the ''perspective'' right. There is no point in ''not seeing the wood for the trees''. To get the equation right, there is sometimes merit in choosing an author who is not a paediatrician in the general sense of that word but is expert in another discipline which subtends the area of study. That philosophy will be adopted when appropriate as well as widening the net of authors from around the world. It is not the task of the author of a Perspective to make a critical evaluation of the paper in question. That has already been done through rigorous peer review and the paper accepted for publication. Indeed, it is only original articles (in general) that have been accepted without much revision that will be considered for an accompanying Perspective should the Editors think there is something unique to highlight and develop further. The original paper is a prompt or a template on which to build a Perspective for added thought and perhaps debate. The coupling of an original paper with a Perspective to appear in the same issue has generated the need to ''fast track'' such articles and this can only be to the benefit of all concerned.

The current issue of *Archives* contains a unique blend of an original paper on circumcision to prevent urinary tract infection coupled with a duo of Perspectives on the subject.[3–5] When the two experts, from Europe and the USA respectively, were chosen to write a Perspective on the original systematic review by Singh-Greval *et al*,[3] it was anticipated that they would express opposing views. This is indeed the case; is there sufficient reason to think that they have been peering down opposite ends of the telescope! Perhaps not, but there is clearly a difference of opinion as to whether routine neonatal circumcision should be practised irrespective of the known association with urinary tract infection in uncircumcised boys. Both writers approach the Perspective from different angles and mount cogent arguments to state their case, with the European one perhaps not so readily leaping off the fence. This is not the only example of medical practice differing radically on the two continents, but at least it is not going to result in significant conflicts such as trade embargoes or other more serious disputes. I am not about to adjudicate on the topic because I am not an expert on it. But like all paediatricians, parents often ask my opinion about the merit or otherwise of circumcision. This trio of articles on the subject does certainly provide helpful reading on how to ensure at least that parents are in possession of the relevant facts and are able to engage in ''non-directional counselling''. In considering the topic of circumcision, one is reminded of the classic paper by Douglas Gairdner on the fate of the foreskin.[6] A former Editor of *Archives of Disease in Childhood*, he was certainly in favour of a ''conservative'' approach to the foreskin in the hope that simple hygienic measures would avoid what he opined were thousands of unnecessary circumcision operations being performed each year. It is interesting that the list of conditions he discussed which were claimed to be prevented by circumcision, such as penile cancer and venereal disease, did not include urinary tract infection. Would his conclusions have been different more than 50 years later in the context of the volumes that have been written on urinary tract infection prevention. In trying to find any other advantages of circumcision, Gairdner unearthed the intriguing observation that 25% of the mothers he interviewed to obtain a comparative maternal versus paternal view on circumcision for their son did not know whether their husbands were circumcised or not. One must assume that time has moved on.

Perspectives provide an opportunity to highlight the best of research published in *Archives* by tapping in to the rich resource the journal has available to draw upon for authoritative opinions and discussion. Above all, it is the readership that will gain from the breadth of knowledge generated by an eclectic mix of subjects and writers.

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Circumcision

Circumcision for preventing urinary tract infections in boys: North American view

E J Schoen

Commentary on the paper by Singh-Grewal *et al* (see page 853)

Almost 20 years ago, Wiswell and colleagues[1] found that uncircumcised infant boys had a 10-fold greater likelihood of having urinary tract infection (UTI) in the first year of life than boys who had been circumcised as newborns. That finding has been repeatedly confirmed, and the protective effect of newborn circumcision against UTI is well established, as documented in a 1992 meta-analysis of nine separate studies.[1] A report from Sweden—where newborn circumcision is unusual—showed a preponderance of UTI in male infants,[2] although UTI is much more common in older girls. The procedure at issue is newborn circumcision, because the younger the infant, the more likely and severe is the UTI and the greater the danger of sepsis and death. UTIs in infants manifest as pyelonephritis with high fever, usually requiring hospital admission and parenteral therapy, whereas UTI which develops later in life (usually cystitis) is milder and more easily treated. Imaging studies conducted after UTI in infants has resolved often show evidence of renal damage with scarring.[3] In a 1997 *Commentary* in this journal, I indicated that Europe, in opposing circumcision, was ignoring compelling medical evidence.[4] The reply concerning UTI was the unsubstantiated claim that infant UTI—except when associated with renal tract anomalies—is rarely seen in the United Kingdom.[4]

In this issue of the journal, Singh-Grewal *et al*[5] from Australia reviewed 12 studies and concluded, as did the earlier meta-analysis by Wiswell,[1] that circumcision substantially reduces the risk of UTI. Wiswell[1] reported that UTI developed in about 1% of uncircumcised normal boys without renal anomalies; circumcision reduced the risk of UTI by 90%. Instead of using this significant benefit as an argument in favour of routine newborn circumcision, Singh-Grewal *et al* argue that the data support circumcision not in normal boys but in boys with recurrent UTI or vesicoureteric reflux. This interpretation of the findings is flawed for several reasons:

- Newborn circumcision prevents UTI. Waiting for a UTI to develop before making the decision to circumcise risks the possibility of allowing renal damage in immature kidneys, and vesicoureteric reflux may result from pyelonephritis. The strategy of waiting for a UTI to develop is analogous to postponing immunisation of an infant until the child is exposed to the pathogen or is diagnosed with the disease.
- The immediate newborn period offers a ''window of opportunity'' for circumcision because the infant is programmed for stress and quickly recovers, stress hormones are increased, healing is rapid, and the thinness of the foreskin eliminates the need for sutures.
- Circumcision in the newborn nursery is about 10 times less expensive than if the procedure is performed postneonatally. Local anaesthesia is the standard of care in newborn circumcision.
- Although the dangers and high prevalence of UTI occur mainly in the first year of life, studies of older children and adults are inappropriately included in the analysis. That the prevalence of UTI in boys decreases with increasing age may explain why the odds ratio in boys is not as favourable as in earlier studies. The 2% complication rate mentioned is high. In a 1999 report,[6] the American Academy of Pediatrics stated that complications of newborn circumcision are ''rare and usually minor'' and that complications occur at a rate of 0.2% to 0.6%—3 to 10 times lower than the rate cited by Singh-Grewal *et al*.
- In discussing the rationale for routine newborn circumcision, Singh-Grewal and colleagues overlook a key point: Preventing infant UTI is only one of the many lifetime benefits of newborn circumcision.[6 7] During infancy and childhood, circumcision prevents phimosis and balanoposthitis and facilitates cleanliness. In young men, circumcision helps prevent certain sexually transmitted diseases[8] and (because of improved genital hygiene) encourages more varied sexual activity. More than 40 separate studies (mainly from subSaharan Africa) have shown that circumcised men are two to seven times less likely to acquire HIV after exposure than are men with foreskins.[9] The foreskin has specialised cells that bind the AIDS virus and allow it to enter the body.[10] Human papilloma virus (HPV) is diagnosed three times more often in uncircumcised men than in circumcised men.[11] HPV is the causative agent of both penile cancer and cervical cancer. Penile cancer is seen almost exclusively in uncircumcised men, and women with uncircumcised partners are more likely to acquire cervical cancer.[11]
- In concluding that preventing UTI in normal boys is not a sufficient reason to recommend routine circumcision, the authors neglect not only the multiple preventive health benefits listed above but the role of the parents in making the decision. Medical policy today is not for the physician to tell parents and patients what to do; instead, physicians engage in ''non-directional counselling.'' Parents of infants should be told of the benefits and risks of the procedure in an objective manner to allow for truly informed consent so that the parents, not the physician, make the decision. This scenario assumes that the physician is knowledgeable on the topic and presents a valid picture.

The USA and Europe are at opposite ends of the practice spectrum regarding routine newborn circumcision: Unlike the situation in Europe, most boys born in the USA are circumcised. This statistic includes not only the 64% of circumcision procedures recorded on the newborn discharge form but also those not recorded on the discharge form and those done after the newborn period. Thus the total circumcision rate in the USA is 75–80% as measured by actual surveys. In contrast, circumcision in Europe is not a routine secular medical procedure; except for men circumcised for medical reasons, the rare circumcised man in Europe can be assumed to be Jewish or Muslim. Most uncircumcised males in the USA are immigrants or sons of recent immigrants, most commonly Latino/Hispanic. Perhaps, as the growing evidence on the multiple proven preventive health benefits of newborn circumcision becomes more

widely known and accepted, European practice will change; acknowledging the role of circumcision in protecting against UTI is a good start.

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Circumcision

Circumcision for preventing urinary tract infection in boys: European view

P S J Malone

Commentary on the paper by Singh-Grewel *et al* (see page 853)

Circumcision is the commonest surgical procedure carried out in boys and it probably originated 15 000 years ago.[1] It was initially done for religious, ritualistic, and cultural reasons and it was not until the 19th century that the procedure was ''medicalised''. The original therapeutic circumcisions were performed for phimosis and since then indications for surgery have altered with the trends of the day. In some countries these trends turned to dogma, resulting in the virtual routine circumcision of newborn boys. It was estimated that 61% of all boys born in the USA in 1987 were circumcised.[2] It is also fascinating to observe how this dogma can pervade other cultures. Traditionally Koreans did not circumcise their boys until their exposure to many thousands of American troops during the Korean War; now Korea is the only country in that region practising routine circumcision.[3] This high rate of routine newborn circumcision generated concern, and in the USA the American Academy of Pediatrics issued various circumcision policy statements, the most recent being in 1999; this concluded, ''Existing scientific evidence demonstrates potential benefits of newborn male circumcision; however, these data are not sufficient to recommend routine neonatal circumcision''.[4] Medical indications for circumcision can be subdivided into absolute and relative, with the absolute indications generally accepted as phimosis secondary to balanitis xerotica obliterans and recurrent balanoposthitis, occurring in 1.5% and 1% of boys, respectively.[5] There are many relative indications including the prevention of penile and cervical cancer, the prevention of sexually transmitted disease, particularly HIV/AIDS, and the prevention of urinary tract infection (UTI), but are the benefits for these indications of such degree to justify a policy of routine circumcision? The prevention of UTI remains the most interesting and perhaps the most persuasive relative indication for male circumcision and continues to provoke controversy, but the question must be asked whether this is an argument to justify the continuation of the lucrative practice of routine circumcision or whether there is truly a medical benefit.

The association between UTI and the uncircumcised state was first recognised in 1982.[6] Since then there have been numerous observational and case–control cohort studies and these have shown a three to seven times increased risk of UTI in uncircumcised compared with circumcised infants, with the greatest risk in infants under 1 year of age.[4] There were many methodological problems with these studies, making their relevance difficult to assess and thus making it impossible to establish firm evidence based guidelines. In a report in this issue, Singh-Grewal and colleagues undertook a meta-analysis of 12 studies assessing the association between UTI and circumcision and applied stringent criteria before accepting any study into their analysis.[7] However, in reaching their conclusions they had to make various assumptions based on the results of other studies, particularly with respect to the recurrence rate of UTI in preschool children in the absence of a urinary tract anomaly and the recurrence rate in patients with vesicoureteric reflux (VUR) of grade 3 and above. These assumptions detracted from a solid evidence base but the conclusions of the study still represented a reasonable consensus view to guide clinical practice at the present time.

Singh-Grewal *et al* concluded that 111 circumcisions would be required to prevent one UTI, and in the UK at the present time this would cost the NHS approximately £55 000.[7] It is doubtful that a cost–benefit analysis could ever justify routine circumcision under those circumstances. However the same study estimated that only 11 circumcisions would be required in boys with recurrent UTI and four in boys with grade 3 or more VUR to prevent a single UTI, making the cost–benefit analysis much more acceptable and attractive. It is interesting to note that this approach to circumcision has been adopted empirically by many paediatric urologists over the past decade, and from

personal communications it would be difficult to find a urologist who would not offer a circumcision to a boy with recurrent UTI or a boy who developed a UTI despite conservative treatment in the presence of a serious underlying abnormality of the urinary tract such as VUR, posterior urethral valves, neuropathic bladder, and many other conditions. In my experience many boys troubled with recurrent UTI in the clinical settings described above have been "cured" by a circumcision. It is an intervention that should always be considered. However, a note of caution must be struck on assessing the benefit of circumcision even in the presence of an underlying abnormality of the urinary tract. In a recent interesting controlled trial, Kwak *et al* could find no benefit for circumcision when it was done at the same time as anti-reflux surgery for severe VUR, irrespective of the age of the patient.[8]

One further note of caution must be raised before completely dismissing the role of routine circumcision in reducing the risk of UTI. The cost–benefit of preventing a single UTI is questionable, but what is the cost–benefit of preventing renal scarring? In the only randomised controlled trial on circumcision and UTI, Nayir found DMSA evidence of renal parenchymal abnormalities in 18% of 88 boys presenting with UTI.[9] This study went on to show a significant reduction in further infection following circumcision, but if the circumcision had been done in the newborn period would the kidneys have been protected from damage in the first instance? This is a question that neither this or any other study can answer at the present time, and the recommendation of Singh-Grewal *et al* for a randomised controlled trial must be supported. Surely, however, we must not just limit such a study to UTI but include an assessment of renal scarring as well.[7]

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Head injury

Skull *x* rays, CT scans, and making a decision in head injury

R C Tasker

Commentary on the paper by Reed *et al* (see page 859)

Over the last year the problem of radiological investigation of the acutely head injured child has been much featured in this journal. We were not so much concerned with what to do with the severely injured—such children are, invariably, intubated and mechanically ventilated, and the most pressing question is to identify whether they need immediate surgery. Head computed tomography (CT) is the obvious investigation. Rather, the real problem arises in the uncooperative 1 to 8 year old who just won't lie still long enough for CT—is it really worth getting one even if it means endotracheal intubation and a brief anaesthetic, or will a skull *x* ray suffice, or should the child be admitted for observation until we are sure all is well?

Dunning *et al* reviewed 16 previously published papers and provided us with a meta-analysis of variables that predict significant intracranial injury in minor head trauma.[1] Kupperman commented on this report and presented the broader context of what should or shouldn't be done in the emergency department with this information.[2] Later in the year the CHALICE (children's head injury algorithm for the identification of significant clinical events) study group presented the implications of applying United Kingdom National Institute of Clinical Excellence (NICE) guidelines to the emergency department management of exactly such children.[3] The authors reported the theoretical impact of advocating early CT in place of skull *x* ray and admission. Data from 10 965 children attending three hospitals between February 2000 and August 2002 were used in the model. Twenty five per cent of the patients had a skull *x* ray, 0.9% had head CT, and 3.7% were admitted. The authors calculated that adherence to the NICE guidelines would have resulted in a 0.3% skull *x* ray rate, an 8.7% CT rate, and a 1.4% admission rate. They concluded that implementing the new guidelines should not increase the workload caused by patients attending the emergency department with head injury, but will "move their management from the observation ward to the radiology department." In this issue of the journal, Reed *et al* take this particular discussion one step further by describing what has actually happened in their emergency department.[4] But before we discuss the detail and implications of these paediatric data, we should briefly review the broader perspective of emergency neuroradiology for minor head injury in adults.

In 2001 Stiell *et al* developed a highly sensitive clinical decision rule for use of CT in adults with minor head injuries as an alternative to risk stratification based on skull *x* ray.[5] Ten Canadian centres conducted a prospective cohort study of consecutive adults who presented with a Glasgow coma scale (GCS) score of 13–15 after head injury. The investigators were interested in two main outcomes: the need for neurological intervention, and clinically important brain injury on CT. In 3121 patients, 8% had clinically important brain injury, and 1% required neurological intervention. The Canadian CT Head Rule was derived from these data and consisted of five high risk factors (failure to reach GCS of 15 within 2 hours, suspected open skull fracture, any sign of basal skull fracture, vomiting more than twice, or age older

than 65 years) and two medium risk factors (amnesia before impact longer than 30 minutes, and dangerous mechanism of injury). The high risk factors were 100% sensitive for predicting the need for neurological intervention, and the investigators calculated that application would require only 32% of patients to undergo CT. Later, in 2003, Stiell *et al* validated this rule in a second cohort of a similar number.[6] Application of the Canadian CT Head Rule into emergency department practice in the UK has been discussed,[7 8] and the department in Cambridge has evaluated its impact on clinical practice.[9 10] A ''before and after'' study—seven months in 2001 and nine months in 2002—of minor head injury (GCS 13–15) in individuals older than 15 years showed that CT rates increased from 47/330 (14%) to 58/267 (20%), admissions for observation increased from 111/330 (34%) to 119/267 (45%), and skull *x* ray rates fell from 33% to 1.6%. The suggestion from these data in adults is that, while the ''rule'' does reduce skull *x* ray rate, lowering the threshold for CT does not obviate the need for admission—presumably, in Cambridge, this is still being used as a diagnostic test of potential neurosurgical intervention.

In this issue of the journal, Reed *et al* report a ''before and after'' study in children aged between 1 and 14 years attending one hospital emergency department with head injury.[4] Data from 1867 patients attending between August 2002 and July 2003 were compared with data from 1535 patients attending between august 1998 and July 1999. The hospital had decided that routine skull *x* rays had no place in the paediatric emergency department for children aged 1 year and older, and they had rules to guide admission for observation or head CT. Between the two periods there was no change in admission rate (10.1% *v* 10.9%), no change in proportion of patients with abnormal CT scans (25% *v* 26%), and no difference in identification of intracranial injury (0.2% *v* 0.4%) or in rates of neurosurgical intervention (0% *v* 0.1%). However, twice as many individuals were exposed to CT (1% *v* 2.1%). These data are important because of two clinical questions that arise from them.

First, why do we admit children with minor head injury? Is it because of the mechanism of injury, or the history, or a reduction in GCS score, irrespective of the radiological findings? Minor head injury in children is not the same as in adults. The mechanism of head injury is different: children are not the drivers of automobiles or motorcycles; rather, they are usually the passengers, pedestrians, or cyclists. We have no data to indicate that a GCS score of 13–15 has the same meaning in children and adults,[11] and amnesia is impossible to assess in the young child. It now seems likely that, like the adult experience,[9 10] introducing a CT rule in children will have no impact on reducing admission rates. In contrast to the suggestion from the CHALICE study group,[3] management is not moved ''from the observation ward to the radiology department.'' In fact, in the report by Reed *et al* the radiology department became much less involved (before and after: 20.6% *v* 1.9%). Clearly, the end points we are most interested in are intracranial injury and need for neurosurgical intervention. We know that admission is a poor diagnostic test for these outcomes—that is, it is not very specific: the vast majority of children (97%) admitted for observation are discharged the following day without any further treatment being given.[8] So we don't really have an answer to our question – why do we admit children? – but it is clear that we will need to learn more about our behaviour and the decision making process, and how we can make it more efficient in children.

Second, what are the implications on public health of carrying out more CTs for minor head injury? In the report by Reed *et al* there is the suggestion that the radiation dosage per case of head injury was equivalent across the two series (0.045 *v* 0.042 mSv), and was therefore not influenced by the introduction of the CT rule. However, the key issue is that the CT rate was doubled. In the first series 16 children had CT: 13 patients were exposed to 2 mSv from CT (11/13 being normal), three were exposed to 2.11 mSv from skull *x* ray and CT (1/3 normal scans), and 337 were exposed to 0.11 mSv from skull *x* rays alone. In the second series 39 patients were exposed to 2 mSv from CT (29/39 normal scans). Kupperman recently reviewed for the journal the risk of radiation from CT[2]: the lifetime attributable risk for fatal cancer from one CT ranges from 1 per 2000 scans for young infants to 1 per 5000 for those 10 years old.[12 13] Taken together with the point above, if admissions and interventions are unaltered by the introduction of a CT rule we need to consider who has most to lose from the reduction in skull *x* rays at the expense of increasing the CT rate, and give thought to broadening the debate by also giving parents a choice.

The study by Reed *et al* is a step in developing better head injury protocols for children. We now know what actually happens to children in one emergency department. In the ensuing years we should hear more from various large groups: the CHALICE study, the CATCH study (Canadian assessment of tomography for childhood head injury), NEXUS (the national emergency *x* radiography utilisation study), and ISHIP (the international study of head injury project).

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