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[Intervention Review]

Surgery for traumatic optic neuropathy

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ABSTRACT

Background

Traumatic optic neuropathy (TON) is an important cause of severe visual loss following blunt or penetrating head trauma. Following the initial insult optic nerve swelling within the optic nerve canal or compression by bone fragments are thought to result in secondary retinal ganglion cell loss. Optic nerve decompression with steroids or surgical interventions or both have therefore been advocated to improve visual prognosis in TON.

Objectives

To examine the effects and safety of surgical interventions in the management of TON.

Search methods

We searched CENTRAL (which contains the Cochrane Eyes and Vision Group Trials Register) (*The Cochrane Library* 2013, Issue 4), Ovid MEDLINE, Ovid MEDLINE In-Process and Other Non-Indexed Citations, Ovid MEDLINE Daily, Ovid OLDMEDLINE, (January 1950 to May 2013), EMBASE (January 1980 to May 2013), Latin American and Caribbean Literature on Health Sciences (LILACS) (January 1982 to May 2013), the *meta*Register of Controlled Trials (*m*RCT) (www.controlled-trials.com), ClinicalTrials.gov (http://clinicaltrials.gov) and the WHO International Clinical Trials Registry Platform (ICTRP) (www.who.int/ictrp/search/en). We did not use any date or language restrictions in the electronic searches for trials. We last searched the electronic databases on 28 May 2013. We also searched the reference lists of other reviews and book chapters on TON. We also contacted researchers in the field.

Selection criteria

We planned to include only randomised controlled trials (RCTs) of TON in which any form of surgical intervention either on its own or in combination with steroids was compared to steroids alone or no treatment.

Data collection and analysis

Two authors independently assessed the titles and abstracts identified from the search strategy. No studies were found that met our inclusion criteria and therefore none were included for analysis.

Main results

No studies were found that met our inclusion criteria.

Authors' conclusions

The current body of evidence consists mostly of small, retrospective case series. Given the wide range of surgical interventions used in TON it is very difficult to compare these studies, even qualitatively. However, there is a relatively high rate of spontaneous visual recovery and

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no evidence that surgical decompression of the optic nerve provides any additional benefit. On the other hand, surgery carries a definite risk of complications such as postoperative cerebrospinal fluid leak and meningitis. The decision to proceed with surgery in TON therefore remains controversial and each case needs to be assessed on its own merits. Although there is an urgent need for an adequately powered, RCT of surgical intervention in TON, this will prove a difficult endeavour.

PLAIN LANGUAGE SUMMARY

Surgery for the treatment of traumatic optic neuropathy

The optic nerve transmits visual information from the eye to the brain and traumatic optic neuropathy (TON) refers to any injury to the optic nerve secondary to trauma. After the optic nerve has been injured, it becomes more swollen and this can lead to further damage. Traumatic optic neuropathy often results in severe visual loss and the vast majority of affected patients are young males in their thirties. Surgery has been used in TON to try and reduce this abnormal swelling or remove bone fragments. There are currently no good quality studies that show greater visual improvement following surgery compared to no treatment. Surgery carries a definite risk of complications which must be considered.

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