

Evaluation of Durotomy Incidence Using Hospital Discharges Databases and its Use for Evaluating the Relative Safety of Different Bone Removal Devices

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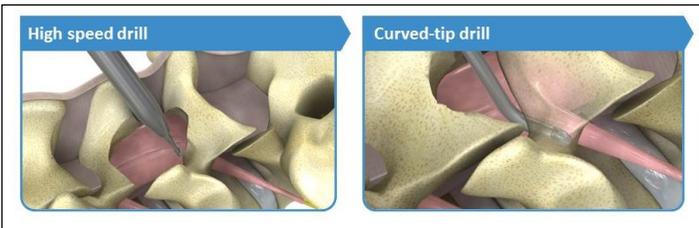
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Introduction

A durotomy is one of the possible complications of spinal surgery. Without adequate treatment, durotomy can lead to clinical complications, as well as to longer hospitalization and increased costs.

It is useful to have a reference durotomy incidence rate for the evaluation of the relative safety of different surgical aspects.

The purpose of this study was to use clinical data, patient discharge databases and the existing literature to estimate the incidence of durotomy in general and for several bone-removal devices: The high-speed drill, curved-tip high-speed drill and ultrasonic osteotomes.



Methods

The general incidence of durotomy was estimated by using data extracted from:

- The US National Inpatient Sample (NIS) database
- The US National Hospital Discharge Survey (NHDS)
- The literature.

Several calculation methods of the incidence were used.

The incidences for the high speed drill and the ultrasonic osteotome devices were derived by combining studies from the literature.

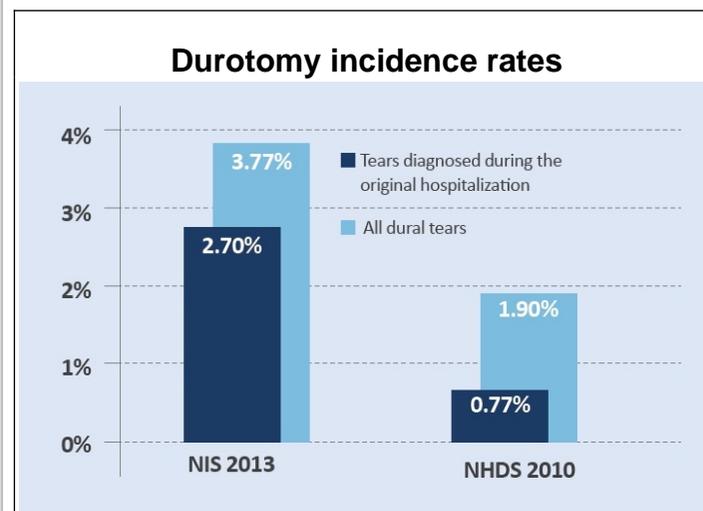
The incidence for the curved-tip high-speed drill was calculated using data collected during 305 operative procedures.

Results

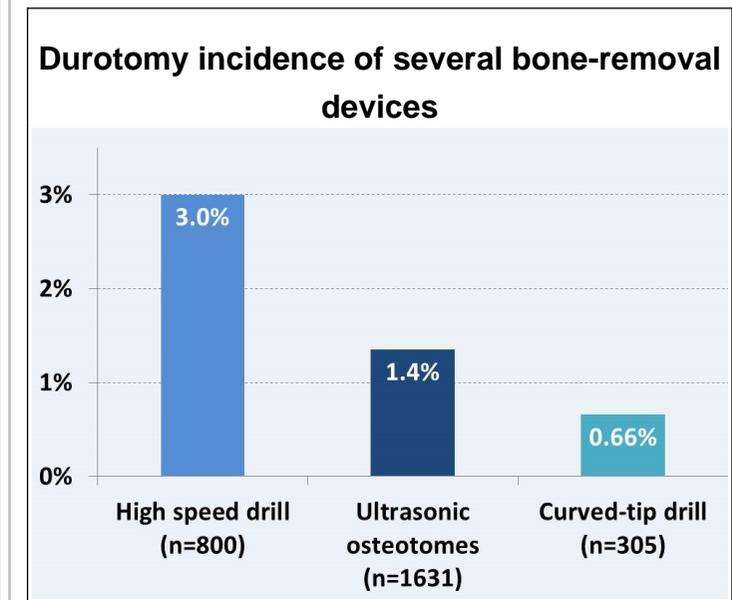
Durotomy incidence was estimated using two main calculation methods:

- Assuming the dural tear was identified and documented during the same hospitalization as the original spinal surgery.
- Calculation of the incidence using all dural tears documented in the database, assuming some dural tears are not immediately detected after the surgery.

The calculated overall incidence range was 0.77%-3.77% depending on the method of calculation and the database used. These values are relatively low when compared with the range of 1%-40% reported in smaller studies.



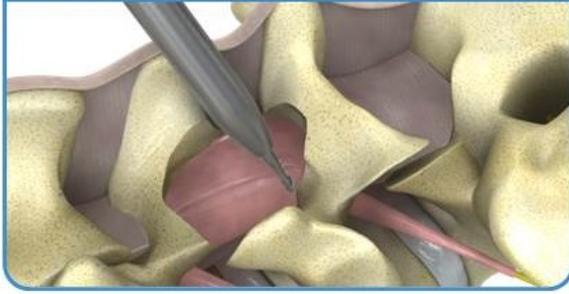
Durotomy incidences associated with several bone-removal devices were calculated.



Conclusions

- The calculated general durotomy incidence is affected by the method of evaluation.
- The choice of bone-removal device can potentially reduce the incidence of this complication.
- The incidence associated with the curved-tip high speed drill was relatively low, suggesting that this device offers a potentially safer alternative to traditional techniques.

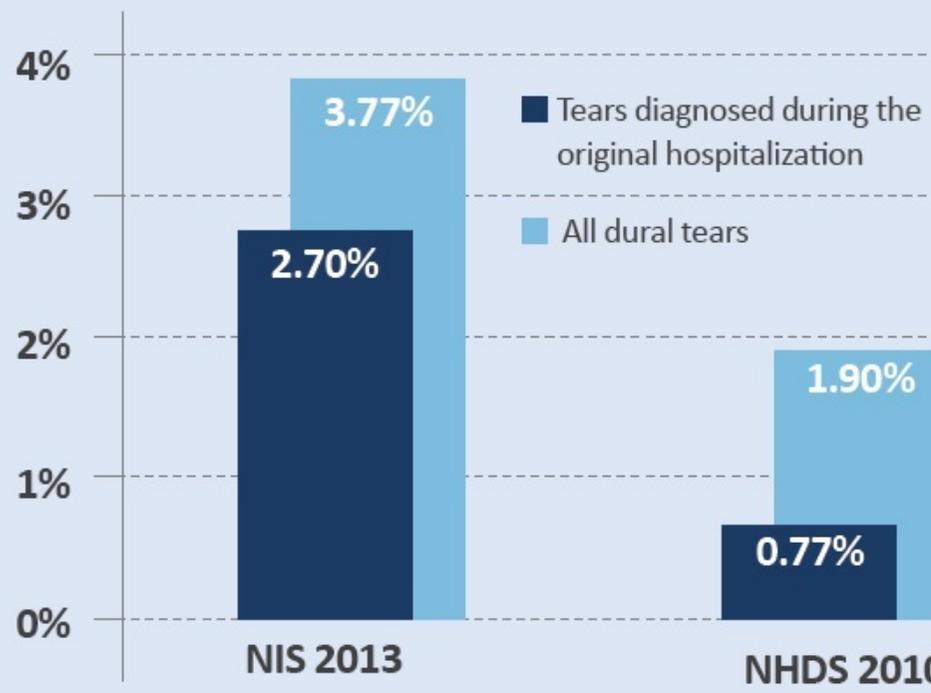
High speed drill



Curved-tip drill



Durotomy incidence rates



Durotomy incidence of several bone-removal devices

