Abstract

OBJECT
Stereotactic biopsy procedures are an everyday part of neurosurgery. The procedure provides an accurate histological diagnosis with the least possible morbidity. Robotic stereotactic biopsy needs to be an accurate, safe, frameless, and rapid technique. This article reports the clinical results of a series of 100 frameless robotic biopsies using a Medtech ROSA device.

METHODS
The authors retrospectively analyzed their first 100 frameless stereotactic biopsies performed with the robotic ROSA device: 84 biopsies were performed by frameless robotic surface registration, 7 were performed by robotic bone fiducial marker registration, and 9 were performed by scalp fiducial marker registration. Intraoperative flat-panel CT scanning was performed concomitantly in 25 cases. The operative details of the robotic biopsies, the diagnostic yield, and mortality and morbidity data observed in this series are reported.

RESULTS
A histological diagnosis was established in 97 patients. No deaths or permanent morbidity related to surgery were observed. Six patients experienced transient neurological worsening. Six cases of bleeding within the lesion or along the biopsy trajectory were observed on postoperative CT scans but were associated with transient clinical symptoms in only 2 cases. Stereotactic surgery was performed with patients in the supine position in 93 cases and in the prone position in 7 cases. The use of fiducial markers was reserved for posterior fossa biopsy via a transcerebellar approach, via an occipital approach, or for pediatric biopsy.
CONCLUSIONS

ROSA frameless stereotactic biopsies appear to be accurate and safe robotized frameless procedures.