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Letter to the Editor

Stereotactic brain biopsies and operative complications: technique to further decrease risks

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Dear Editor

We found the article by Grossman *et al.* on ''Haemorrhagic complications and the incidence of asymptomatic bleeding associated with stereotactic brain biopsies'' very interesting. The authors retrospectively reviewed 355 cases and determined the risk for hemorrhage was 7% and the risk for death less than 1%. The authors provide us with the desperately needed percentage risks for complications that patients need and often want to hear preoperatively [2]. The challenging part of a brain biopsy occurs after the procedure in the hands of the pathologist, when needle biopsies may not provide the ideal amount of tissue, leading to difficult and sometimes incorrect diagnosis. Mittler *et al.* sent 30 different specimens of astrocytoma from brain biopsies to four independent pathologist to assess variability in the diagnosis [3]. The pathologists had agreement of 62% for glioblastomas, 36% for anaplastic astrocytomas, and 57% for low-grade astrocytomas. A significantly greater degree of reliability was seen in histopathological diagnoses of low- or high-grade astrocytomas than in those of intermediate-grade astrocytomas. The authors demonstrated that the highest variability occurs at the point of clinical decision making – namely, intermediate-grade tumors that may or may not be selected to receive adjuvant therapy [3].

The challenge for the neurosurgeon is weighing adequate sample collection while decreasing the complication risks. Obviously, the more biopsies taken will increase the risk for hemorrhage. We had a postoperative brain biopsy hemorrhage which led to our own 'in-house' retrospective review of 25 patients whom underwent framed stereotactic CRW brain biopsy to assess the complication rate and found very similar complication rates to Grossman *et al.* however, we postulated that this risk could be lowered by altering the technique.

The Cosman-Roberts-Wells (CRW) frame has been used for years for brain biopsies with good results [1, 4]. Most surgeons when performing CRW brain biopsies will insert the cannulated brain needle and proceed to collect at least four separate specimens by spinning the needle within the cannula 'in a clockwise fashion' collecting at 12, 3, 6 and 9 o'clock, thus hopefully increasing the diagnostic yield. We offer that in a University setting or a large hospital where the neuropathologist is present for cases, that a cooperative effort between the neurosurgeon and pathologist could limit the biopsy specimen to one. We recommend notifying the pathologist after the burr hole and then proceed to pass the cannulated brain needle, collect the specimen and personally hand it to the waiting pathologist. The cannula is still in the patient during pathological review and if a diagnosis is made the case is over, if further tissue is required the surgeon is still prepared. This cooperative effort could substantially decrease the risk for complications, in theory by 75% if the initial plan was to collect four specimens. We have performed biopsies in this fashion and while the pathologist often prefer more specimen, it has been successful. The success of the procedure is most dependent on the initial localization within the tumor to maximize the overall yield of pathological tissue. We commend Grossman *et al.* on their study and hope that our technical

suggestion may assist neurosurgeons that have the opportunity to work in concert with their pathologist to further decrease the operative risk in these cases.

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