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TBI and behavioral changes

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The care of patients with minor head trauma is evolving. No longer is loss of consciousness needed to occur in order to be concerned about the late sequelae of minor head trauma. The CT scan of the head is no longer the predictor of long term outcome. MRI may reveal punctate lesions and EEG may demonstrate focal slowing. There is a higher incidence of psychiatric illness one year after the injury than that found in the general population. Depression, PTSD, substance abuse, panic disorder, generalized anxiety, OCD, personality disorders and bipolar disorder & schizophrenia can occur as a result of TBI. The treatment of athletes with minor TBI is also evolving with graded return to plan. This presentation will discuss this evolution in diagnosis and treatment of patients with minor TBI and its relationship to psychiatric illness.

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oThimble– From seed to surgeon

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Introduction: When placing wires on bone in deep tissues the orthopedic surgeon is at risk of glove penetration and sharp injury. We created a simple 3D printed device to help protect the finger of the surgeon from injury while operating. This device acts as a thimble while the operating surgeon uses sharp objects. This device could be used for numerous operations in orthopedic surgery and any type of surgery where sharp tipped wires are placed in deep tissues. We describe the steps from idea to functioning prototype. This prototype is specific for hip surgery.

Aim: Aim of this study is to develop a simple 3D printed device to facilitate safe and accurate placement of percutaneous k-wires during surgery.

Method: We designed a low fidelity prototype using computer-aided-design (CAD) computer software. We used a selective laser sintering (SLS) three-dimensional printer to create a rapid prototype printed model. We subsequently re-developed numerous versions of the device to create a usable prototype. We conducted material testing and sterilized our device. The device is an acrylonitrile butadiene styrene (ABS) polymer.

Results: We designed a novel thimble surgical device using CAD software and 3D printing technology. After material testing a practical device was produced and tested.

Conclusion: We have created a practical working prototype of a thimble device (oThimble) to be used in the operating theatre to protect the surgeon from sharp injury. We will investigate the process of bringing a prototype to market and conduct a feasibility study.

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