

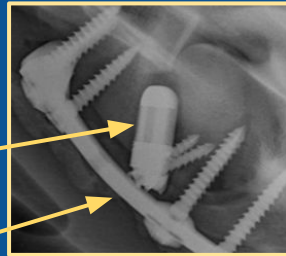
Problem

Intervertebral Disc Degeneration in Racehorses

- Caused by traumatic falls
- Leads to compression on spinal cord, often leading to euthanasia of horse
- Current solution - implanting spinal cage

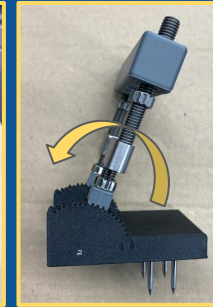
Inadequate Surgical Procedure

- Lack of proper instrumentation
- Cage requires a backplate for stability



Goal: Design appropriate instrumentation and cage that does not require a backplate

Solution

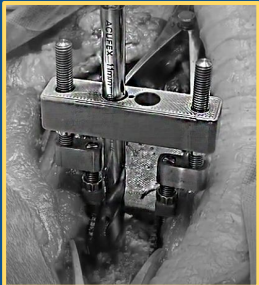


Spinal Cage with 4 Screw Holes

Provides improved fixation via attachment to adjacent vertebrae
Eliminates need for backplate

Drill Guide Prototype with Adjustable Angle and Depth Control

Validation Testing via Cadaver Lab



Testing showed considerable decrease in surgical time with streamlined drilling procedure and less fluoroscopy



Cage successfully implanted and fixated onto C5-C6 junction

Cut-out space for cage drilled out using Drill Guide

Future Plans

Ongoing work is to be passed on to Drexel's Implant Research Center. Some areas of revision include:

- Adding more fixation spikes to the instrument to increase stability during drilling procedure
- Implementing lattice structures in cage to promote bone growth

Impact

Through development of these technologies, the group has begun to reinvent and standardize a surgical procedure that was previously risky and time inefficient. With this development, a dramatic reduction in surgery time as well as risk has been achieved.