Case Report:

**Treatment of C5-6 Disc Herniation with the Stand-Alone Expandable VariLift®-C Cervical Interbody Fusion Device**

**Abstract:**

This case report demonstrates the successful use of the Stand-Alone VariLift Expandable Cervical Interbody Fusion Device at C5-6 via an anterior approach. The VariLift system was designed to restore disc space height and achieve solid interbody fusion in a stand-alone capacity, without supplemental anterior plate and screw fixation.

**Introduction:**

Anterior cervical discectomy and fusion (ACDF) is a widely accepted method of treatment for single or multi-level cervical disc herniations and/or degenerative disc disease. The current gold standard method of obtaining fusion across the disc space includes insertion of an anterior interbody fusion device containing autograft or allograft followed by anterior plating. Common complications of this surgery include dysphagia due to the profile of the plate and loosening or dislocation of the hardware. This case study describes the stand-alone use of the zero profile VariLift-C cervical interbody fusion device to treat a patient with cervical DDD and disc herniation at C5-6.

**Case Summary:**

A 44 year old female presented with chronic shoulder and arm pain secondary to C5-C6 DDD and disc herniation. Her symptoms were confined to her posterior neck and C6 nerve roots bilaterally. Her neurological examination was normal. Plain radiographs revealed narrowing of the C5-6 disc space and loss of cervical lordosis. MRI scans indicated the presence of a central and bilateral C5-6 disc herniation.

The patient had experienced chronic pain for 2 years prior to surgery and failed to respond to all conservative treatment modalities.

The patient underwent an anterior cervical discectomy and fusion (ACDF) at the C5-C6 level. Following discectomy and decompression of the spinal canal and foramina, two 9mm VariLift-C devices were placed bilaterally in the disc space.
Following exposure of the anterior cervical spine at C5-6, disc removal and decompression of the spinal canal was performed using a Caspar retractor. The Caspar pins were placed in the midline of each vertebra. During disc removal, the vertebral endplates were carefully preserved so as to function as the weight bearing surfaces for the VariLift devices, and the cartilaginous plates were removed to ensure proper bone graft to vertebral body contact. The 7.5 and 9.0mm taps were used as sizing devices to assist in selecting the proper implant size. The VariLift-C devices are self-tapping, and do not require the disc space to be tapped prior to insertion.

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Two VariLift-C devices were inserted bilaterally into the prepared disc space. The first VariLift was screwed into place with no impaction on one side of the midline using the insertion wrench. The device was counter-sunk into the center of the disc space, ensuring stability and correct sagittal balance of the cervical spine. Intermittent fluoroscopy confirmed the position and depth of the VariLift device. Once positioned in the disc space, the VariLift-C device was expanded to engage the sharp grooves on the surface of the device into the edges of the vertebral endplates. The second device was then inserted and expanded on the ipsilateral side of the disc space in a similar fashion. The final position of each VariLift placed the device's large fenestrations in contact with the vertebral endplates providing for optimal bone graft to vertebra contact. Final intra-operative imaging was completed verifying proper zero-profile device placement.

The disc space and VariLift devices were then irrigated and filled with locally acquired bone graft. Bone wax was placed over the anterior end of each device to secure the bone graft inside the graft chambers.

**Surgical Technique:**

The surface ridges grip into the bone and provide immediate stability and resistance to migration over time. The large fenestrations provide a clear view into the graft chamber.

**Discussion:**

VariLift-C has been used successfully in the EU for over 10 years. Utilizing clinical data from the EU to support the submission, the VariLift-C was cleared by the FDA in Jan 2013, for use as a stand-alone expandable interbody fusion device in the treatment of single level cervical disc herniations and/or degenerative disc disease. Insertion of the device is straightforward and, due to the grooved surfaces on the inferior and superior surfaces, it provides immediate stability without the need for supplemental fixation. Its zero-profile design leaves no instrumentation anterior to the vertebral bodies thus decreasing the risk for potential post-operative complications such as chronic dysphagia or hardware failures. Each device has a large bone graft chamber and wide fenestrations providing excellent graft to vertebra contact. When used stand-alone, micro-motion is preserved in the facet joints of the fused interspace, thus potentially lessening the incidence of future degenerative changes developing in adjacent disc spaces.

**Conclusion:**

This case demonstrates the successful stand-alone use of the VariLift-C Expandable Cervical Interbody Fusion Device in the treatment of a patient with single level cervical disc herniation and degenerative disc disease. This straightforward approach provides immediate and long term stability of the cervical spine with excellent clinical results without the needs for anterior plating.

Surgical blood loss of less than 50mL was noted, and there were no intra-operative or post-operative complications. Post-operative imaging indicated excellent positioning of the VariLift devices. The patient did well, and was discharged home on her 2nd post-operative day. She had uneventful post-operative recovery, and returned to normal activities without restriction.
References:


