Cook – Zenith Alpha™ Thoracic Endovascular Graft
Annual Clinical Update – 2023

I. Overview:

This annual clinical update provides a review of the ongoing experience with the Zenith Alpha™ Thoracic Endovascular Graft used in the treatment of descending thoracic aortic aneurysms and ulcers. The device has been commercially available in Europe since 2013 and in the United States since 2015, at which time it was initially approved for the treatment of isolated lesions of the descending thoracic aorta (not including dissections). Subsequently (in 2017), the indication was narrowed to include only aneurysms and ulcers of the descending thoracic aorta following reports of thrombosis/occlusion within the graft in patients treated for blunt thoracic aortic injury (BTAI) during commercial use. In this update, 5 years of IDE clinical data and 8 years of worldwide commercial experience are presented. The post-approval study requirements for this device consisted of follow-up (through 5 years) of the pivotal and continued access patients enrolled in the IDE for the aneurysm/ulcer indication.

Links to the original approval order, Summary of Safety and Effectiveness Data, post-approval study webpage, and recall notice removing the BTAI indication and smaller graft diameters (18 – 22 mm) from the market can be accessed here:
https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfpma/pma.cfm?id=P140016

The current IFU with clinical summary section can be accessed here:
I-ALPHA-THORACIC-442-04

II. Worldwide Device Distribution:

There have been approximately 74,370 devices distributed worldwide as part of the IDEs (192 for aneurysm/ulcer indication, 51 for BTAI indication) and commercially (74,126 since 2015, including 67,855 proximal components [tapered and non-tapered], 2,779 distal components, and 3,462 distal extensions).

III. Clinical Evaluations:

A description of the original IDE study and results at the time of PMA approval as well as a description of the post-approval study with final 5-year follow-up results (IDE study subjects and post-approval study subjects combined) can be found in the corresponding summary of clinical studies sections of the IFU, which can be accessed using the link provided in **Section I**.

IV. Worldwide Recalls, Safety Communications and Field Safety Notices:

In 2018, Cook sent a voluntary communication to healthcare providers to reiterate that the Zenith Alpha™ Thoracic Endovascular Graft is indicated for the treatment of patients with aneurysms or ulcers of the descending thoracic aorta. This communication followed observations of Type I endoleak in patients treated with the device for aortic dissection outside the US. The Zenith Alpha™ Thoracic Endovascular Graft is not indicated for the treatment of aortic dissection in any market and has not been evaluated for safety and effectiveness in this patient population.

In 2017, Cook voluntarily recalled the BTAI indication and smaller graft diameters (18-22 mm) likely to be used only for BTAI based on reports of graft thrombosis/occlusion during commercial use of the device for BTAI. The following is a link to the recall notice on FDA's website:
https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfRES/res.cfm?id=154969

During the current reporting period, there have been no recalls, safety communications, or field safety notices.

V. Worldwide Commercial Experience:

Except for the risk of graft thrombosis/occlusion following treatment for BTAI, there have been no reported adverse reactions, side effects, or injuries attributable to the device that are not addressed in the labeling for the device or that occurred with unexpected frequency.

VI. Explant Analysis:

Explant from IDE studies: There has been no new information during this reporting period. Two explants from the IDE studies have been analyzed following implant durations of 182 days (due to Type I endoleak post-treatment for BTAI) and 331 days (due to aorto-esophageal fistula post-treatment for aneurysm). Noted observations, which may have occurred during the explant procedure, included cut/broken stents and sutures. One explant from commercial use has been analyzed following an implant duration of 830 days (explanted due to thrombosis/occlusion post-treatment for BTAI); there were no integrity observations noted during analysis. A second explant from commercial use has been analyzed following an implant duration of 747 days (explanted due to reported Type III endoleak from either a suture hole or graft damage); however, the regions of concern were either free from holes/damage or not submitted for analysis.

Explant from worldwide commercial experience: One explant from worldwide commercial use (involving one proximal component [ZTA-P] and one distal component [ZTA-D] implanted in a patient) was received during the reporting period and analyzed. The reason for explant was to replace ZTA devices with a non-Cook device due to continuous aneurysm growth. The ZTA grafts were implanted for 67 days. The explanted devices were found to have graft wear around body stent (ZTA-P) and graft holes on a proximal sealing stent (ZTA-D), both of which appeared to have been caused *in vivo*. Green suture frays on body stents and suture hole elongations were observed on both ZTA-P and ZTA-D; all observed suture elongation holes were less than acceptable maximum hole size (i.e., 0.20 mm^2). Importantly, no stent integrity issues (i.e., stent bends, fractures, or cuts) were observed under radiographic and microscopic imaging. While damage from surgical instruments during explantation was sometimes obvious, it was not always possible to determine if observations occurred before explantation or if the explantation process contributed to, or caused, these observations.

VII. Literature Review:

Over 100 publications involving use of the Zenith Alpha™ Thoracic Endovascular Graft for any reason have been identified since 2015. There were no notable publications during this reporting period. Adverse events reported in publications are treated as complaints by the manufacturer and may similarly result in filing of a Medical Device Report (MDR) to FDA, if applicable. As noted in **Section V**, there have been no reported

adverse reactions, side effects, or injuries attributable to the device that are not addressed in the labeling for the device or that occurred with unexpected frequency.

VIII. Conclusion:

Based on available clinical study data and world-wide clinical experience to date, endovascular therapy with the Zenith Alpha™ Thoracic Endovascular Graft continues to be a viable treatment option for patients with aneurysms or ulcers of the descending thoracic aorta.

Adverse Event Reporting:

Accurate and timely reporting of adverse events to Cook and FDA is critical for monitoring device performance and detection of potential device-related safety issues. Adverse events should be reported to Cook via email to CustomerRelationsNA@CookMedical.com or via phone at 1-800-457-4500, ext. 152146 (7:30 am-5:00 pm EST) and to FDA via MedWatch FDA Form 3500, a copy of which is available at: https://www.fda.gov/media/135528/download.

Patient Follow-Up and Selection:

Regular follow-up of all patients treated with the Zenith Alpha™ Thoracic Endovascular Graft is required. Physicians should tailor patient follow-up to the needs and circumstances of each individual patient. With regards to patients already treated for BTAI and recognizing the potential clinical significance of graft thrombosis if not addressed, it is particularly important to continue following these patients in accordance with the IFU, including imaging follow-up such as contrast-enhanced CT scans to monitor for thrombus within the graft, which may appear as a contrast void within the lumen of the graft on imaging.