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Advancing science for life™

# How Laser Fibers Can Damage Flexible Ureteroscopes

**Energizing the future of laser surgery**

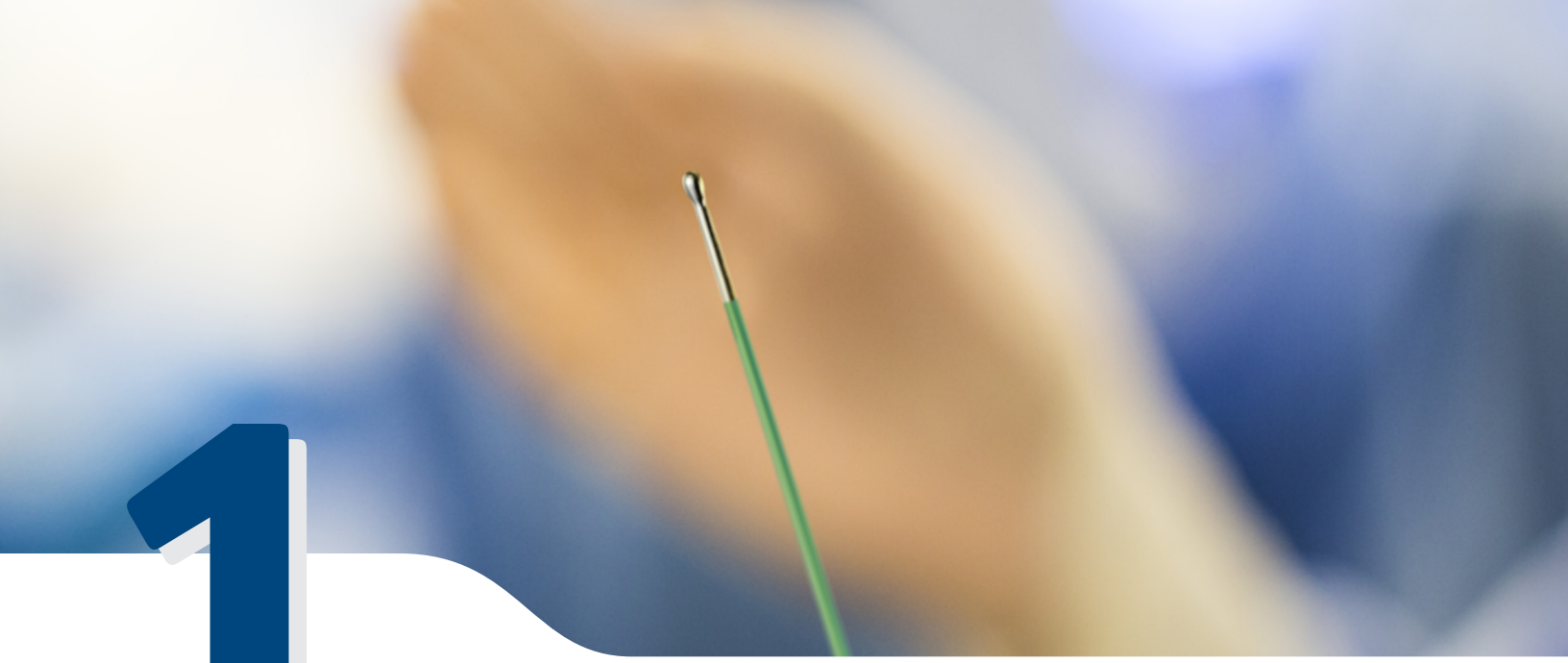
Boston Scientific is committed to moving laser stone treatment forward with an evolving portfolio of high-performance products that work together to simplify life for urologists.

1 Traumatic Tip

2 Lack of Fiber Flexibility

3 Fiber Fracture

4 Inefficient Energy Transmission

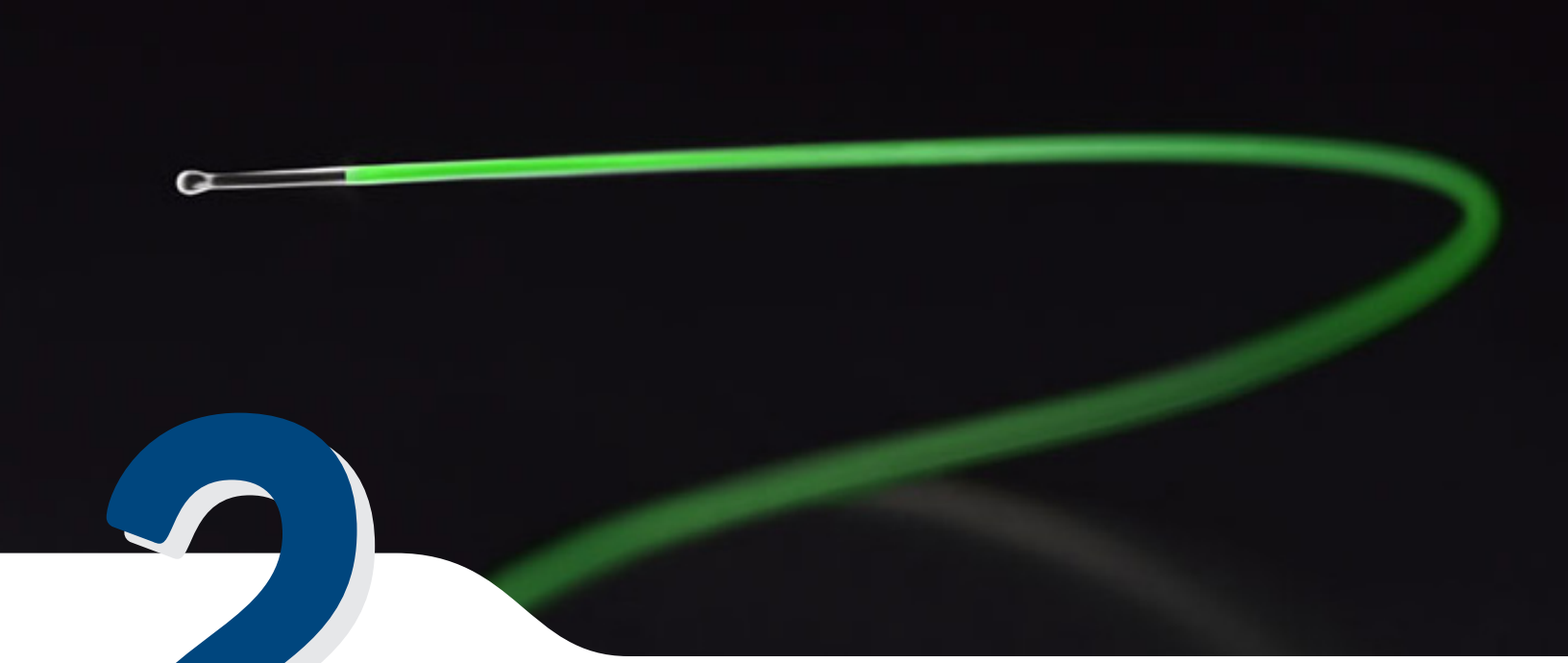


# 1 Traumatic Tip

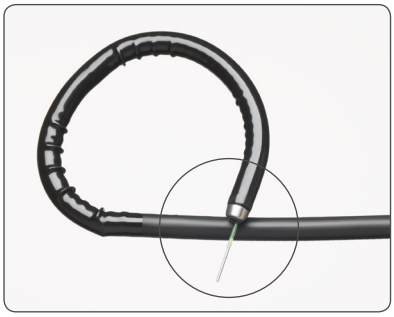
With a flat tip fiber, the channel wall may be injured by a holmium laser fiber "flat tip" when there is more than a 30° angle, and the tip of the laser fiber has been shown to shave the inner surface of the channel at 60° or more. Additionally, it is possible that the fiber tip will penetrate the channel wall if the fiber is advanced against resistance.[i]

### The Flexiva™ TracTip Laser Fiber Solution

This video shows the Flexiva TracTip Holmium Laser Fiber **passing through a fully deflected scope** without damage to the scope liner or optics.



# 2 Lack of Fiber Flexibility

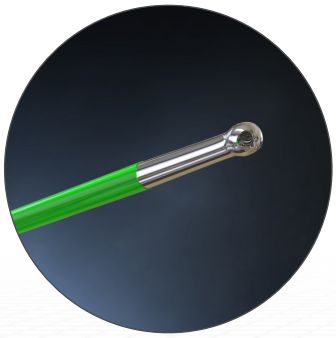


Flexiva™ Laser Fiber

Ureteroscope longevity directly correlates with time spent in the lower pole. Working in the lower pole results in stress and fatigue of the deflection mechanism, this leads to a loss of scope deflection and in some cases to scope failure. Therefore, fiber flexibility is an important variable in terms of accessing the stone and improving scope longevity…while the difference between some fibers may be small, the benefit over multiple procedures may be cumulative.[ii]

## The Flexiva™ TracTip Laser Fiber Solution

The Flexiva 200 Laser Fiber **only limited the deflection angle of the scope by 5°**, which compares favorably to previously tested sub-200micron fibers.[iii]



Flexiva™ TracTip Laser Fiber

The Flexiva TracTip Laser Fiber reduced force of insertion in a deflected ureteroscope by approximately **33%** without compromising maneuverability compared to a standard laser fiber.[iv]

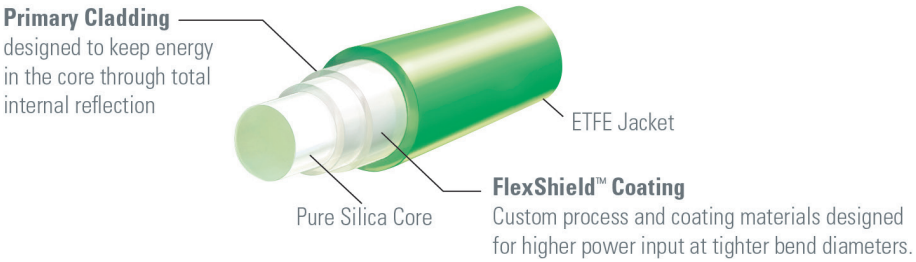
# 3

# Fiber Fracture

Tapered fibers are more prone to failure than similar sized, non-tapered fibers.[v] The connector tends to convert off-axis rays into higher order rays that might exceed the fiber Numerical Ap and cause failure.[vi]

### The Flexiva™ TracTip Laser Fiber Solution

The FlexShield™ Coating: Energy transmission and resistance to fracture is **consistent in both straight and bent fibers**.[vii]




The Flexiva Fibers are designed to reduce scope damage that can be caused by fiber breakage. Flexiva TracTip can withstand a 50 Watts at 1.0cm bend.[viii]

# 4 Inefficient Energy Transmission

Low transmission indicates energy is being lost at the connector, along the fiber or at the tip. This again can lead to damage to the laser console or ureteroscope.[ix]

### The Flexiva™ TracTip Laser Fiber Solution

100% Output Efficiency[viii]: The Flexiva Laser Fiber is designed with a custom-guided connector that **guides errant laser energy into the core of the fiber** without increasing laser reflection angle.[viii]

For additional information:
*6 Characteristics of an Ideal Laser Fiber* e-brochure.
**Click to link to brochure.**

[i]Seto, C., et al. Durability of working channel in flexible ureteroscopes when inserting ureteroscopic devices, *Journal of Endourology*, Volume 20, 223-226, March 2006.

[ii]Mues, A., et al. Evaluation of 24 holmium: YAG laser optical fibers for flexible ureteroscopy, *Journal of Urology*, Volume 182, 348-354, July 2009.

[iii]Knudsen, B., et al. Evaluation of a new 240 micron single-use holmium: YAG optical fiber for flexible ureteroscopy, *Journal of Endourology*, Volume 27, April 2013.

[iv]Lipkin, M. Ball-Tip holmium laser fiber may reduce flexible ureterosope damage, *Journal of Urology*, Volume 191, e197, May 2014.

[v]Mues, A. Evaluation of 24 holmium: YAG laser optical fibers for flexible ureteroscopy, *Journal of Urology*, Volume 182, 348-354, July 2009.

[vi]Teichman, J., et al. HoYag lithotripsy proximal fiber failures from laser and fiber mismatch, *Journal of Urology*, Volume 71, 1049-1051, 2008.

[vii]Knudsen, B., et al. Evaluation of a new 240 micron single-use holmium: YAG optical fiber for flexible ureteroscopy, *Journal of Endourology*, Volume 27, April 2013.

[viii]Bench test results on file with Boston Scientific. Bench test results may not necessarily be indicative of clinical performance.

[ix]Teichman, J., et al. HoYag lithotripsy proximal fiber failures from laser and fiber mismatch, *Journal of Urology*, Volume 71, 1049-1051, 2008.

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