A Retrospective Study Comparing 8mm and 10mm Fully Covered Self Expanding Metal Stents in Biliary Obstructions

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A Retrospective Study Comparing 8mm and 10mm Fully Covered Self-Expanding Metal Stents (FCSEMS) in Biliary Obstructions

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Background

- Biliary stenting has evolved dramatically since endoscopic placement of the first stent in 1980.
- The most common need for a biliary stent is a result of a biliary stricture which prevents drainage of bile into the intestine.
- Bile duct strictures may cause biliary obstructions.
- Obstructions of biliary flow leads to obstructive jaundice and elevated liver enzymes.
- Over time stents have been developed in varying materials and sizes.
- FCSEMS are used in an off-label fashion to treat benign and malignant biliary strictures.
- The value of FCSEMS use in patients with biliary strictures are many and include: minimally invasive relief of jaundice, nonsurgical intervention, lower rate of stent obstructions (compared with metal and plastic stents), can remain in place for prolonged periods, and are relatively easy to remove.

Methods and Objectives

Method:
- Descriptive statistical analysis of data pulled from electronic patient records determined by eligibility criteria outlined below.

- Eligibility criteria
  - Placement of FCSEMS in the biliary tree at LVHN by either Hiral Shah, MD or Shashin Shashin, MD in a 5 year time period (08/2009-08/2014)
  - Cholangiographic proven biliary obstruction
  - Age ≥18

- Exclusion Criteria
  - Age ≤18

Objectives:
- Compare the following in 8mm and 10mm FCSEMS:
  - Patient demographics
  - Fever/elevated WBC post procedure
  - Number of days from procedure to discharge
  - Change between pre and post procedure aspartate aminotransferase (AST), alanine aminotransferase (ALT), and Total Bilirubin (TB); all of which are markers of hepatobiliary obstruction
  - Endoscopist preference

Results

<table>
<thead>
<tr>
<th>Table 1: Clinical characteristics of patient population</th>
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<tr>
<td><strong>Patient Characteristics</strong></td>
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<td><strong>8mm (N=18)</strong></td>
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<tr>
<td>Age - (years)</td>
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<tr>
<td>Male Sex - no. (%)</td>
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| Figure 1. Comparison of 8mm and 10mm FCSEMS presented as the percent change in AST, ALT, and TB between pre procedure and the lowest value of each test in 7 days post procedure. |

| Figure 2. A) Left, displays Dr. Hiral Shah’s procedures delineating 8mm and 10mm stent usage in a population of 16 patients. B) Right, shows Dr. Shashin Shashin’s procedures delineating 8mm and 10mm stent usage in a population of 20 patients. |

Discussion

Conclusions
- Conclusions cannot be drawn due to the descriptive nature of the study however, from the observational data, multiple research questions were posed.

Findings:
- 61% of the patients in the study were male.
  - Are biliary obstructions less common in females, or are male patients more likely to be stented with FCSEMS?
- 83.3% of the patients were white.
  - Are biliary diseases more prevalent in whites than other races, or is this population more likely to get stented?
- Only 2/36 patients had post procedure fevers.
  - Could the low incidence be attributed to the quality of FCSEMS, and is the incidence lower than other stents?
- Although no significant differences in age and stent size were observed, correlation between age and stent size may explain reasons for using a 8mm vs. 10mm stent.
- Shortened patient hospitalization after stenting for the 10mm stent (mean stay 1.83 days) compared with 2.44 days for 8mm stent.
  - An important aspect to consider for hospital costs as well as patient well-being.
- Greater percentages of improvement in AST, ALT, and TB in 8mm when compared with the 10mm.
  - Are smaller diameter stents more efficient or are they placed in patients with more significant pathology and thus a more profound response?
- Further surveying of patient cases and endoscopists may explain choice of stent size.

Limitations:
- Minimal data collection of specifics on patient procedures, time allotted to the study, and small sample size of patients.
  - Limitations caused difficulty in determining whether observations were coincidence or worth further investigation, with more demographic data (i.e. reason for stenting, procedural complications) may be better able to develop further questions.

Future Plans:
- Data collection will be ongoing and remain part of a larger IRB approved protocol to evaluate the differences between 8mm and 10mm FCSEMS.

REFERENCES

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