



# Rectourethral fistulas: A comparison of the National Inpatient Sample and the American College of Surgeons National Surgical Quality Improvement Program

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## KEYWORDS:

Rectum;  
Urethra;  
Fistula;  
Outcomes assessment

## Abstract

**BACKGROUND:** The National Surgical Quality Improvement Program (NSQIP) and the National Inpatient Sample (NIS) may be used to evaluate outcomes for uncommon conditions such as rectourethral fistulas (RUFs). We sought to review cases of RUFs and compare variables from both registries to evaluate disparities among reported data.

**METHODS:** Review of NSQIP (2005-2013) and NIS (2006-2011) of all patients with a RUF or RUF repair based on *ICD-9-CM* or *CPT* coding.

**RESULTS:** The NSQIP and NIS data sets were compared based on *International Classification of Diseases, 9th Revision, Clinical Modification* diagnosis coding for a RUF (599.1; American College of Surgeons National Surgical Quality Improvement Program: n = 286, NIS: n = 2,357).

There were no relevant financial relationships or any sources of support in the form of grants, equipment, or drugs.

The authors declare no conflicts of interest.

All above authors meet the following conditions for authorship: a. Substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data; b. Drafting the article or revising it critically for important intellectual content; c. Final approval of the version to be published.

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This manuscript was presented as a poster presentation at the American Society of Colorectal Surgeons annual meeting, Los Angeles, CA, April 30 to May 4, 2016.

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Manuscript received June 23, 2016; revised manuscript July 24, 2016

Comorbidities varied between data sets, and in-hospital morbidity in RUF cases was greater in the NIS vs NSQIP data sets (48% vs 11%;  $P < .01$ ). Further analysis identified similar outcomes when cases of a RUF that underwent an operation were compared in the NSQIP ( $n = 284$ ) and NIS ( $n = 274$ ) database.

**CONCLUSIONS:** This study represents the largest cohort of RUF cases and characterizes how using variables from both databases better elucidates details of this rare condition. These results exhibit how evaluating comparable metrics demonstrates inconsistencies between databases.

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Rectourethral fistulas (RUFs) are a complex but rarely acquired condition that remains a challenge to repair. A RUF is an abnormal connection between the rectum and the urethra that consequently allows for drainage of fecal material through the urinary tract. This may result in recurrent urinary tract infections, which can significantly impact the quality of life in these patients. This particular subtype of fistula may develop as a complication following radical prostatectomy due to an inadvertent injury of the rectum while developing the dissection plane between the rectum and Denonvilliers fascia, with a reported rate of .6% to 9%.<sup>1</sup> In addition, a RUF may be secondary to congenital abnormalities, trauma, pelvic infections, inflammatory bowel disease, or iatrogenic from any deep pelvic operation.<sup>2,3</sup> The management of this disease, although complicated, has evolved. Traditionally, fecal diversion to promote spontaneous closure of the fistula tract, and minimize symptoms, has been performed. However, definitive surgical repair is often required. Multiple approaches to the operative closure of a RUF have been described, and include: transperineal or transanal with a mucosal- or muscle-based advancement flap, posterior transsacral, transabdominal, transvesical, transsphincteric, and a combination.<sup>4,5</sup> In extreme cases, a radical resection may be required, which includes a proctectomy or cystectomy/prostatectomy with ileal conduit. Owing to the paucity of numbers and data regarding these procedures, the treatment of choice and overall postoperative outcomes are still unclear.

Currently, the treatment of a RUF is supported by evidence that has been based on small single center studies, reviews, or case reports.<sup>2,6-8</sup> Unfortunately, developing a large clinical trial to evaluate the outcomes of RUF repairs is challenging due to the low incidence of the disease. To account for this limitation, administrative and clinical databases, such as the National Inpatient Sample (NIS) and American College of Surgeons National Surgical Quality Improvement Program (ACS-NSQIP) can provide national trends and means to study uncommon conditions over a wide range of experience among medical centers throughout the country. Although population-based data lacks some of the specifics garnered by smaller studies, and rely on accurate data entry, they are able to make up for this in providing a robust sample size. Each database has a unique methodology, with differing goals. The NIS is the largest all-payer inpatient care data set and is based on billing information, whereas NSQIP, a clinical registry,

provides defined patient information. The variations in each database allow the added ability to acquire comparable data that may otherwise be overlooked if each database was used individually. Using both the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM)* and Current Procedural Terminology (CPT) coding in combination, maximizes the ability to evaluate both the disease and related surgical procedures associated with these conditions. Thus, we sought to use both the NIS and ACS-NSQIP database to provide a descriptive review of patient characteristics and comorbidities associated with RUF, as well as evaluate the outcomes after operative interventions. Furthermore, variables from either database were compared as a means to evaluate the disparities among the reported data in both registries. We hypothesized that demographics and outcomes would differ between data sets and may lead to varying conclusions.

## Methods

This study was reviewed under the Tripler Army Medical Center Human Research Protections Program and determined to be exempt from regulatory requirements requiring Institutional Review Board approval. All authors are experienced in population-based outcomes research, and collaborative efforts provided the optimal means of data analysis and interpretation.

A retrospective analysis was performed of all patients with a RUF or a RUF repair from 2005 to 2013 using the ACS-NSQIP, and from 2006 to 2011 in the NIS database. Different time periods were queried from each data set in efforts to maximize the number of RUF cases identified for analysis. The *ICD-9-CM* code 599.1 was used to identify all cases with a RUF in the NIS database, and the *ICD-9-CM* procedural code 58.43 was used to define the surgical closure of a RUF. This was restricted to the primary procedure code. A subgroup analysis in the NIS database was performed of cases with a diagnosis of inflammatory bowel disease (555.x and 556.x), and a rectal (154.x), or prostate (185, 233.4, 236.5) neoplasm.

In the NSQIP database, *ICD-9-CM* code 599.1 identified a diagnosis of RUF, and an operative closure of a rectourethral fistula with and without a colostomy was defined using the CPT codes 45,820 and 45,825, respectively. CPT codes 44,187/44,188 (laparoscopic enterostomy/colostomy) or 44,310/44,320 (open enterostomy/colostomy) were

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