Use of Imaging in the Evaluation of SSI Following Appendectomy for Complicated Appendicitis

Italicized questions represent possible prompts should the interviewee not address that topic or something similar.

Introduction (2min)
Our group has reviewed data submitted to NSQIP-P from April 1, 2020 to March 31, 2021 looking at post-operative CT scan utilization in the setting of suspected SSI/OSI for patients with complicated appendicitis. Postop CT utilization is found in the targeted appendicitis report, however this report does not consider CT scan utilization as it relates to SSI/OSI rates. Our group had the unique opportunity to review CT scan utilization as it related to SSI/OSI rates and would like to better understand what drives CT scan use and how best to reduce CT scan use in the post-operative setting. As such, our goal in the discussion today is to better understand your center’s practices so that we may achieve our goal. Your center was (high/low) for CT scan use and (high/low) for SSI/OSI rates.

Demographic Questions (5min)
1. Please describe your pediatric surgery group and the healthcare system in which it operates.
   a. Are there multiple sites and which participate in NSQIP-P?
   b. Are data on CT usage from OSHs being included in NSQIP-P?
   c. Of the centers for which data are collected in NSQIP-P, how many pediatric surgeons are included?
2. General hospital demographics
   a. Percentage of population covered by Medicaid
   b. Are you a free-standing children’s hospital, a children’s hospital within an adult hospital, or a general hospital who cares for children?
   c. Do you have training programs (residency, fellowship)?

Volume Questions (5 min)
1. How many appendectomies are performed at your hospital annually (an average is fine)?
2. What percentage are complicated?

Diagnostic Imaging Questions (25min)
3. Do you utilize a pre-op imaging protocol for complicated appendicitis patients? If so, what does that look like (U/S only, U/S then CT, U/S then MRI, CT alone, MRI alone)?
4. Do you have a clinical practice guideline for the post-op care of patients with complicated appendicitis? If so, does this include an imaging component?
   a. Is there a specific post-op imaging protocol in place?
   b. What type if imaging is preferentially utilized as first line and as next step if indicated?
c. Which factors help you determine patients for whom postop imaging to r/o abscess may be indicated (lab data, clinical picture, postop day, etc.)?

d. Is there variation in postop imaging practices among the surgeons at your institution?

5. When concerned about an SSI/OSI in a postop patient with complicated appendicitis, what factors drive the type of imaging pursued?

a. Do patient factors (obesity, age, comorbidities, patient compliance, etc.) impact the imaging modality pursued?

b. Do environmental/system factors impact the decision (modality available, ease of interpretation, etc.)?

c. Does timing impact the type of imaging modality pursued (weekends, holidays)?

d. Does cost impact the type of imaging modality pursued?

e. Does the institution incentivize/disincentivize particular modalities?

f. Do views of others (colleagues, mentors, professional groups, etc.) impact the type of imaging modality pursued?

6. If ultrasound is utilized at your institution, what factors encourage/dissuade its use?

a. Is ultrasound consistently available for use?

b. Under what circumstances are US used as first line imaging modality?

c. Do patient factors (obesity, patient tolerance, etc.) impact ultrasound use?

d. Who performs pediatric ultrasounds at your institution? Does this vary by time of day, weekend, holidays, etc.?

e. Is there a standardized approach to US technique in the workup of SSI/OSI following appendectomy for complicated appendicitis?

f. Is there a standardized approach to reading US following appendectomy for complicated appendicitis?

g. How much confidence is typically placed on US results by the pediatric surgery team?

7. If CT is utilized at your institution, what factors encourage/dissuade its use?

a. Is CT consistently available for use?

b. Under what circumstances are CT used as first line imaging modality?

c. Do patient factors (obesity, patient tolerance, etc.) impact CT use?

d. Is there a standardized approach to CT technique in the workup of SSI/OSI following appendectomy for complicated appendicitis (low radiation protocol, etc.)?

e. Is there a standardized approach to reading CT following appendectomy for complicated appendicitis?

f. How much confidence is typically placed on CT results by the pediatric surgery team?

g. Is your institution concerned about radiation exposure to pediatric patients from CT scan?

h. Are your surgeons concerned about radiation exposure to pediatric patients from CT scan?

i. Are your radiologists concerned about radiation exposure to pediatric patients from CT scan?
j. If you have been able to reduce CT utilization postop, what 3 factors have contributed to your success in doing so? If you are looking to reduce CT utilization postop, what 3 obstacles have prevented your success in doing so?

8. If MRI is utilized at your institution, what factors encourage/dissuade its use?
   a. Is MRI consistently available for use?
   b. Under what circumstances are MRI used as first line imaging modality?
   c. Do patient factors (obesity, patient tolerance, etc.) impact MRI use?
   d. Is there a standardized approach to MRI technique in the workup of SSI/OSI following appendectomy for complicated appendicitis (requires anesthesia/sedation, etc.)?
   e. Is there a standardized approach to reading MRI following appendectomy for complicated appendicitis?
   f. How much confidence is typically placed on MRI results by the pediatric surgery team (i.e. what is the degree of comfort with use of MRI)?
   g. How efficient is MRI at your institution?
   h. Does cost impact the use of MRI?

9. The next set of questions pertain to IR utilization in the setting of SSI/OSI following appendectomy for complicated appendicitis.
   a. Do you have dedicated Pediatric IR at your institution?
   b. Is IR available on weekends, holidays, etc. for abscess drainage? (peds IR, adult IR, peds and adult IR?)
   c. If an IR placed drain is indicated, does IR mandate pre-procedure CT scan?
   d. If an IR placed drain is indicated, will this typically be placed using U/S guidance?
   e. If an IR placed drain is indicated, will this typically be placed using CT guidance?
   f. Do you have any protocols, including imaging, for drain removal?
   g. Is your center’s choice of postop imaging modality influenced by IR and if so, how?

Quality Improvement Questions (25min)

10. Have you pursued any QI projects/initiative to reduce SSI/OSI at your institution?
11. Have you pursued any QI projects/initiative to reduce CT scan utilization at your institution?
12. Has your institution recognized ionizing radiation reduction as an important issue? Has there been commitment to reduce CT use?
   a. Which departments are involved in this discussion (surgery, radiology, ER, hospitalists, etc.)
   b. What multidisciplinary efforts have been made to reduce CT usage? What facilitates/inhibits this?
   c. Has any department/practitioner accepted responsibility for minimizing CT use or taken the lead?
   d. Where does the issue of CT usage reduction fall on the list of priorities of different specialties? EM, Radiology, Pediatric Surgery
   e. What % of your physicians in [EM, radiology, peds surgery] think this is an important issue?
f. Do you have a peds radiology champion? What efforts have they undertaken to reduce CT use?
g. Do you have multidisciplinary meetings to discuss imaging results and usage? Are they regular and well attended?

13. Do you feel that your administration supports quality improvement? Do you feel that there is administration support for CT reduction?
   a. In what ways has the stance of admin encouraged efforts to reduce CT use? Hindered efforts?
   b. Have there been requests made to admin to provide more resources? What types of resources? How have these requests been received?
   c. Where do you think CT reduction falls on the list of admin priorities?
   d. What tactically might be required from admin to support CT reduction?

14. Can you describe the institutional culture towards quality improvement? What factors have precipitated this culture?
   a. Are people open to changes in practice that come from quality improvement initiatives?
   b. What other attempts at quality improvement have been successful?
   c. Are there regular well attended multidisciplinary quality improvement meetings?
   d. Are there institutional organizations dedicated solely to quality improvement?
   e. Is there adequate leadership in the realm of quality improvement?
   f. How have professional relationships affected this culture?

Final Questions/Thoughts

15. Has your institution had any substantial changes for which practices and resultant data today may differ from that collected 2 years ago as reflected in our graph?
16. Do you have any final thoughts that may help us achieve our goal of better understanding postop CT utilization in the setting of SSI/OSI following complicated appendicitis?

We truly thank you for your time and value the information that you have provided! Please feel free to reach out with any additional thoughts or questions