Biliary strictures frequently present a challenge in terms of diagnosis, which requires a multidisciplinary approach. Biliary strictures present a diagnostic challenge, especially when no etiology can be ascertained after laboratory evaluation, abdominal imaging and endoscopic retrograde cholangiopancreatography (ERCP) sampling. These strictures were traditionally classified as indeterminate strictures, although with advances in endoscopic techniques and better understanding of hepatobiliary pathology, more are being correctly diagnosed. The implications of missing a malignancy in patients with biliary strictures—and hence delaying surgery—are grave but a significant number of patients (up to 20%) undergoing surgery for suspected biliary malignancy can have benign pathology. The diagnostic approach to these patients involves detailed history and physical examination and depends on the presence or absence of jaundice, level of obstruction, and presence or absence of a mass lesion. While abdominal imaging helps to find the level of obstruction and provides a ‘road map’ for further endoscopic investigations, tissue diagnosis is usually needed to make decisions on management. Initially ERCP was the only modality to investigate these strictures but now, with the development of endoscopic ultrasound with fine needle aspiration and the availability of newer techniques such as intraductal ultrasound, single-operator cholangioscopy and confocal laser endomicroscopy, the diagnostic approach to biliary strictures has changed significantly.

Traditionally, biliary strictures have been considered to be indeterminate when a diagnosis cannot be made after basic laboratory work-up, abdominal imaging and endoscopic retrograde cholangiopancreatography (ERCP) with biliary sampling. Although up to 30% of biliary strictures can be benign, the vast majority are malignant, the two major malignancies being pancreatic adenocarcinoma and cholangiocarcinoma. Final determination of malignancy in biliary strictures can entail major surgery if pre-operative diagnosis of malignancy cannot be made. The surgical literature suggests that approximately 15–24% patients undergoing surgical resection for suspected biliary malignancy have benign etiology, but there are no clinical or radiological features to reliably distinguish benign from malignant biliary strictures. A pre-operative determination of malignancy is therefore highly desirable, to help plan appropriate treatment including the need for- and type of surgery.

It has always been a challenge to diagnose biliary malignancy in view of difficult access for tissue sampling, no classical features on imaging and lack of a sensitive tumour marker. There is ample data on bile cytology, brush cytology, image guided /EUS guided but diagnostic yield is usually around 50-60%. We retrospectively analysed our data of biliary cytology in last 1 year to assess the diagnostic yield. We also compared the utility of spyglass cholangioscopy plus spybite and conventional ERC plus brush cytology in last 10 cases of indeterminate biliary strictures.

**METHODOLOGY**

The present study was conducted in the Department of Gastroenterology, Gastrocare Hospital Bhopal. After the approval of protocol by the Hospital Ethics Committee and obtaining informed consent from the patient.

**Inclusion criteria**
1. Age group: 38 - 65 years
2. BMI <35 kg/m²
3. American Society of Anesthesiologist (ASA) physical status I and II

**Exclusion criteria**
1. Patients’ refusal or inability to give informed consent.

**KEY WORDS:** Benign biliary strictures, cholangioscopy, endoscopic retrograde cholangiopancreateography.

**ABSTRACT**

Objectives: TO assess the diagnostic yield of cytology, cholangioscopy, cholangiocscopic biopsy and CA-19.9 in patients with malignant obstructive jaundice

Methodology: We conducted a retrospective analysis of consecutive cases of malignant obstructive jaundice/ GB mass/ Pancreatic mass, based on imaging and subjected them to the appropriate cytological examination and CA 19-9 assays and compared them with clinical, radiological and surgical diagnosis.

Results: The diagnostic yield was 61.5% (48/78). It was more for Brush smear (70%) as compared to Bile (50%). Spyglass cholangioscopy was suggestive of malignancy in 8/10, out of which spybite was taken in 2, both of which turned out to be positive. But we switched over to brush cytology as we found spy forceps difficult to use. CA 19.9 levels were available in 30 of 48 confirmed cases and were >500 in 20, between 100 & 500 in 2, between 30 & 100 in 6 and normal in 2. But CA 19.9 levels were also raised to >500 in 4/5 cases of CBD stones with cholangitis

Conclusion: Brush cytology in our set up is a very good tool and yield is about 70%. Very high levels of ca 19.9 are suggestive but cannot be relied upon as a sole evidence of malignancy. Spyglass images strengthen the diagnosis of cholangiocarcinoma but Spyglass is not a practical tool as passage through spy scope is very difficult and time consuming.
Cholangiocarcinoma is a rare tumor arising from the bile ducts. It is known that yield of biliary cytology during ERCP is around 30-50% in various studies. Factors which favor a positive result are older, age longer stricture and presence mass. Our study showed higher yield of brushings, probably because we take brush after dilation of stricture without injecting contrast (air cholangiogram guided) and that we have an onsite pathologist, CA 19.9 has been used by various studies and limitation is poor specificity especially in presence of cholangitis.

There are a multitude of nonoperative tools to evaluate indeterminate biliary strictures: tumor markers, cross sectional imaging, EUS-FNA, and a variety of ERCP-based techniques. Unfortunately, each has its advantages and limitations. As a result, a rational approach to their utilization is needed. Until that time, each patient with an indeterminate bile duct stricture requires a multidisciplinary approach with the goals of maximizing sensitivity for detecting malignancy in the most cost-effective manner.

In our study, we aimed to evaluate the diagnostic yield of brush cytology and biopsy samples for histology on ERCP for cholangiocarcinoma. We compared the results with clinical, radiological and surgical diagnosis.

**RESULTS**

Overall 102 cases were referred for ERCP, out of which 15 had hilar block involving the confluence hence were taken up for PTBD, 4 had operable lesions and hence, were taken up for surgery and 5 had CBD stones masquerading as malignant stricture where CBD clearance was done. Rest 78 where ERCP was done formed the study group. This included 35 cases of Cholangiocarcinoma, 19 Gall bladder CA and 24 pancreatic tumors. In 48 patients, brush smears were taken for cytology; in 28 patients, bile was collected for cytology and in 2 patients, spy bite was taken. Cytology was suggestive of malignancy in 8/10, out of which spybite was taken in 2, both of which turned out to be positive. But we switched over to brush cytology as we found spy forces difficult to use. CA 19.9 levels were available in 30 of 48 confirmed cases and were >500 in 20, between 100 & 500 in 2, between 30 & 100 in 6 and normal in 2. But CA 19.9 levels were also raised to >500 in 4/5 cases of CBD stones with cholangitis.

**DISCUSSION**

Statistical analysis was done using Stata 11 software. Demographic characteristics, For continuous variables descriptive statistics (mean and standard deviations) were computed. For categorical data chi-square test was applied. P < 0.05 was considered significant.

Jung GS, Huh JD et al did an analysis of percutaneous transluminal forceps biopsy in 130 patients suspected of having malignant biliary obstruction. The lesions involved the common bile duct (n = 58), common hepatic duct (n = 39), hilum (n = 14), ampullary segment of the common bile duct (n = 11), right or left intrahepatic bile duct (n = 5), or the entire intrahepatic bile duct (n = 3). In each
Further studies are needed to clarify the role for new technologies available studies. This is probably because we take brushings after more than our sensitivity of brush cytology is higher than most. Our results are comparable with the available literature and evaluation of PSC-related strictures. [10] directed biopsies seem to offer a feasible and promising method in cases of pancreatitis.

Samples were adequate for cytological and histological diagnosis biopsies were successfully acquired from strictures in all cases. and brush cytology in PSC patients clinical feasibility of SOC and directed biopsies, flow cytometry, cholangioscopy in the evaluation of primary sclerosing cholangitis-indeterminate biliary strictures, Siiki A et al studied the role of SpyGlass cholangioscopy (SOC) appears effective in diagnostics of cholangiocarcinoma: epidemiology, risk factors, pathogenesis, and diagnosis. Current gastroenterology reports. 2011 Apr 1;13(2):182-7. 2. Jung GS, Huh JD, Lee SU, Han BH, Chang HK, Cho YD. Bile duct: analysis of percutaneous transluminal forceps biopsy in 130 patients suspected of having malignant biliary obstruction. Radiology. 2002 Sep;224(3):725-30.


SpyGlass images strengthen the diagnosis of cholangiocarcinoma but spibyte is not a practical tool as passage through spy scope is very difficult and time consuming.

SpyGlass SOC and directed biopsies seem to offer a feasible and promising method in evaluation of PSC-related strictures. However, the long-term prognostic value it adds to cytology and flow cytometry remains to be assessed in future trials.

REFERENCES


Early diagnosis of dysplastic changes and exclusion of cholangiocarcinoma (CCA) in patients with primary sclerosing cholangitis (PSC) remain a major clinical challenge. Although SpyGlass cholangioscopy (SOC) appears effective in diagnostics of indeterminate biliary strictures, Siki A et al studied the role of cholangioscopy in the evaluation of primary sclerosing cholangitis-related biliary strictures. The aim of this study was to assess the clinical feasibility of SOC and directed biopsies, flow cytometry, and brush cytology in PSC patients. Brush sample and directed biopsies were successfully acquired from strictures in all cases. Samples were adequate for cytological and histological diagnosis in 9 (82%) and 10 patients (91%), respectively. There were two cases of pancreatitis. They concluded that SpyGlass SOC and directed biopsies seem to offer a feasible and promising method in evaluation of PSC-related strictures. [10]

Our results are comparable with the available literature and moreover our sensitivity of brush cytology is higher than most available studies. This is probably because we take brushings after dilatation and also, we have an on-site cytologist.

Further studies are needed to clarify the role for new technologies such as cholangioscopy, cholangioscopy-directed biopsies, FISH, and advanced imaging techniques (eg, endomicroscopy, narrow band imaging). Because the diagnostic yield of a single intraductal brushing is so poor, should FISH, cholangioscopy, repeat (how many?) brushings, or some combination be routinely performed during the initial ERCP? In the current US health care system, the added costs of these technologies may be offset by improvements in the diagnostic yield of the first ERCP, thereby reducing the need for downstream tests. Similar to EUS-FNA where multiple passes improve the diagnostic yield, prospective studies evaluating the incremental benefit of 2 or more intraductal brushings during the initial ERCP are needed. Enhanced cross-sectional imaging and EUS may further limit the role for diagnostic ERCP but is unlikely to replace its therapeutic impact for affecting biliary drainage. The improved safety profile of laparoscopy should encourage gastroenterologists to obtain an expert surgical opinion early in the management of these patients; while sometimes we feel an obligation to confirm a tissue diagnosis before consultation, surgery may be the inevitable outcome.

CONCLUSION

There are a multitude of nonoperative tools to evaluate indeterminate biliary strictures: tumor markers, cross sectional imaging, EUS-FNA, and a variety of ERCP-based techniques. Unfortunately, each has its advantages and limitations. Brush cytology in our set up is a very good tool and yield is about 70%.

**REFERENCES**