

# OPEN-ACCESS UPPER ENDOSCOPY SERVICE AT PRINCE RASHID BIN AL-HASAN HOSPITAL IS SAFE, EFFECTIVE AND WIDELY ADVOCATED

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## ABSTRACT

**Objective:** To evaluate the safety, benefits, and the spectrum of upper gastrointestinal diseases among patients who underwent diagnostic upper endoscopy at an open-access service related to the Royal Medical Services.

**Methods:** A retrospective analysis of the endoscopy records for patients who underwent elective upper endoscopy over 6-years period 2001-2006 at Prince Rashid Bin Al-Hassan Hospital in the north of Jordan was conducted. Emergency endoscopies were excluded from the study. All endoscopies were performed under local anesthesia using pharyngeal Lignocaine spray. Data collected included the number of patients, waiting time, reasons for performing the procedure, endoscopic findings, and any complication related to the age gender.

**Results:** Three thousand six-hundred seventy nine endoscopies were included in the study. Sixty-two percent of patients were aged less than 45 years. Ninety-four percent of the endoscopies were performed for patients referred from physicians as outpatients and 6% for patients who were already in the hospital. The number of endoscopies performed during the period 2005-2006 was considerably higher (51%) than that performed during the periods 2001-2002 (24%) and 2003-2004 (25%). The main indications for upper endoscopy were epigastric pain (59%), and heartburn (16%). Normal endoscopy was reported in 61% of the patients. The most common single abnormal findings were duodenal erosions (42%), gastric erosions (29%), hiatus hernia (21%), and esophagitis (18%). Gastric cancer was detected in 29 patients (2%), and esophageal cancer in nine cases (0.6%). About one third of the patients had more than one abnormal endoscopic finding. None of the patients had any major complication related to the procedure.

**Conclusions:** Open-access upper endoscopy service is safe and effective in establishing fast definitive diagnosis, and elevates the need for subsequent consultations with other physicians and referral to gastroenterology clinic.

**Keyword:** Digestive disorders, Duodenal erosions, Open-access upper endoscopy service,

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## Introduction

Digestive disorders are extremely common in the general population.<sup>(1,2)</sup> Which group of patients

should be investigated and when remains controversial. Accurate evaluation of symptoms is important because of the implications for

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investigation, management and morbidity, although it is often difficult to reach an accurate diagnosis on clinical grounds alone.<sup>(3)</sup> The diagnosis of upper gastrointestinal diseases by classical symptoms is often incorrect.<sup>(4)</sup> Physical examination and routine hematological and biochemical investigations are also usually unhelpful.<sup>(5)</sup> At this point, the clinician needs to decide whether further investigation is necessary. The patients' perception of their presenting symptoms also plays a significant role in the management strategy. Patients may or may not be bothered by their presenting symptoms.<sup>(6)</sup> Instead, psychosocial factors, including fear of serious disease, may be the important factor for their attendance to the physician.<sup>(7)</sup> Upper gastrointestinal endoscopy has been proven safe and gives a high diagnostic yield. It is the most sensitive and specific method of excluding organic lesions of the esophagus, stomach and duodenum.<sup>(5,6)</sup>

Open-access upper endoscopy service has allowed general practitioners, family physician, or internist to arrange endoscopy without prior gastroenterology consultation, which may save time, elevate the fear of delaying the underlying illness and decrease the need for subsequent consultations with physicians.

We studied upper endoscopies performed in our open-access unit in Prince Rashid Bin Al-Hasan Hospital (PRHH) to determine the indications for endoscopies, waiting time for performing the procedure, the spectrum of upper gastrointestinal disease, any reported complication, as well as patient satisfaction.

## Methods

A retrospective analysis of the open-access upper endoscopy service at PRHH was conducted. The medical records for all patients aged 16 years or above, who underwent upper endoscopy between March 2001 and September 2006, were reviewed. Emergency endoscopies such as (1) Acute upper gastrointestinal bleeding, (2) Corrosive ingestion, (3) Foreign body ingestion, and (4) Food bulbous impaction were excluded from the study. Data collected included the number of the patients, age, gender, waiting time, and reasons for performing the procedure, endoscopic findings, and any reported complication.

The process for performing upper endoscopy with the open-access unit at PRHH is simple and easy. Any physician in the hospital or outside can refer

any patient for upper endoscopy without prior evaluation by a gastroenterologist. An appointment then will be made through the open-access unit nurse for performing the procedure. There was no limitation on the usual indication for upper endoscopy. The endoscopy room set up, the instruments, and nursing staff were the same for all patients. There were two or three endoscopists, who are well trained for performing the procedure. They are all internists and at least one of them is a fellow of gastroenterology. The patients were evaluated before, and during the procedure in order for the endoscopist to be ready for dealing with any complication. All endoscopies were performed under local anesthesia using pharyngeal lignocaine (Lidocaine) spray. Fibro-optic uni-stiffness Gastroscope was used (PENTAX EG 3985, PENTAX Corporation-Germany). Gastric biopsies for *Helicobacter pylori* in case of peptic ulcer were not routinely taken and rapid urease test is not available in PRHH.

Waiting time was defined as the time between the date when the physician referred the patient for the endoscopy and the date of performing the procedure. Major complication was defined as that which needs further management or causing considerable morbidity or mortality as major bleeding that necessitates blood transfusion, aspiration, perforation or cardio-respiratory arrest. Minor complications were considered to be those causing discomfort which resolve with simple measures as throat discomfort, gastric fullness and minor bleeding. Minor bleeding that not necessitates admission or blood transfusion

To evaluate the workload, and whether there was any difference in the endoscopic diagnosis over the study period, we subdivided the service into three periods, 2001-2002, 2003-2004, and 2005-2006.

## Results

Since the start of the open-access upper endoscopy service in March 2001, 3924 gastroscopies were performed on patients aged 16 years or more. Excluded from the study were those with acute upper gastrointestinal bleeding (206 patients), food bulbous impaction (18 patients), corrosive ingestion (12 patients), or foreign body ingestion (9 patients). The actual numbers of patients enrolled in the study were 3434. The mean age of patients was 36.4 years (range 16-86). Sixty-two percent of patients were

aged less than 45, 1509 (41%) were female and 2170 (59%) male. The majority of the patients were healthy, 186 (5%) patients had one or more chronic diseases for example, 43 patients had ischemic heart disease. Ninety four percent of the endoscopies were done for patients referred from physicians as outpatients and 6% for patients who were already in hospital. The mean waiting time for the endoscopy to be performed was 8 days.

For all patients, the main indication for upper endoscopy was epigastric pain (59%). The other indications were heartburn (16%), repeated vomiting (8%), dysphagia (7%), nausea (4%), suspected gastrointestinal bleeding (3%), anemia (2%), and weight loss in 1% (Table I).

**Table I.** Reasons for performing upper endoscopy

	N	%
<b>Included in the study</b>	(N = 3679)	
Epigastric pain	2170	59
Heart burn	588	16
Repeated vomiting	294	8
Dysphagia	257	7
Nausea	147	4
Suspected gastrointestinal bleeding,	110	3
Anemia	73	2
Weight loss	36	1
<b>Excluded from the study</b>	(N = 245)	
Acute upper gastrointestinal bleeding	206	5.4
Food bulbous impaction	18	0.47
Corrosive ingestion	12	0.3
Foreign body ingestion	9	0.24
<b>Total</b>	3824	100

Sixty-one percent of endoscopies (2244 patients) performed were normal, and 1435 (39%) had abnormal endoscopic findings. The most common abnormal finding over all was duodenal erosions (42%). Other findings according to frequency were gastric erosions (29%), hiatus hernia (21%), esophagitis (18%), duodenal ulcer (11%), gastric

ulcer (6%), esophageal varices (1%) esophageal candidiasis (0.8%), esophageal carcinoma (0.6%) and pyloric stenosis (0.6%) (Table II).

**Table II.** Spectrum of endoscopic findings

Abnormal Endoscopic findings	Number (N = 1435)	%
Duodenal erosion	602	42
Gastric erosion	416	29
Hiatus hernia	301	21
Esophagitis	258	18
Duodenal ulcer	158	11
Gastric ulcer	86	6
Gastric carcinoma	29	2
Esophageal varices	15	1
Esophageal candidiasis	12	0.8
Esophageal carcinoma	9	0.6
Pyloric stenosis	9	0.6
More than one finding	445	31

Most of the patients had more than one abnormal endoscopic finding. Endoscopy revealed a finding explaining patients' symptoms in 2943 patients (80%) of the 3679 examinations, whether it was normal or abnormal.

In the study period, there were 38 cases of carcinoma diagnosed by the open-access upper endoscopy service. There were 38 cases of cancer; 29 gastric and 9 esophageal. The mean age of the patients was 64 years, ranging from 55 to 80 years. Thirty-one patients (82%) presented with alarming symptoms, including dysphagia, weight loss or anorexia.

The number of endoscopies performed during the time period 2005-2006 was considerably increased (1896 patients (51%)) in comparison with that done during the period 2001-2002 (926 patients (24%)), and 2003-2004 (884 patients (24%)). The pattern of diagnosis remained nearly similar over the three time periods (Table III).

There were no significant differences between the three time period groups in the indications for the endoscopies, or the spectrum of gastrointestinal findings.

**Table III.** Pattern of endoscopic diagnosis over time

<b>Finding</b>	<b>2001-2002 N=883(%)</b>	<b>2003-2004 N= 920(%)</b>	<b>2005-2006 N = 1876(%)</b>	<b>Total N = 3679(%)</b>
<i>Normal Endoscopy</i>	483 (55 )	523 (59 )	1238 (67 )	2244 (61)
<i>Abnormal Endoscopy</i>	400 (45 )	397 (41 )	638 (33 )	1435 (39)
Duodenal erosion	186 (46)	165 (41 )	251 (39 )	602 (42)
Gastric erosion	134 (33 )	121 (30 )	161 (25 )	416 (29)
Hiatus hernia	69 (17 )	73 (18 )	161 (25)	301(21)
Esophagitis	64 (16 )	76 (19 )	128 (20 )	258 (18)
Duodenal ulcer	58 (15)	42 (11)	58 (9)	158 (11)
Gastric ulcer	31 (8)	23 (6)	32 (5)	86(6)
Gastric carcinoma	4 ( 1)	6 (1.5 )	19 (3 )	29 (2)
Esophageal varices	4 (1 )	5 (1.3 )	6 (0.94 )	15(1)
Esophageal candidiasis	3(0.8 )	1 ( 0.3)	8 (1.3 )	12(0.8)
Esophageal carcinoma	3 (0.8 )	2 (0.5 )	4 (0.63 )	9 (0.6)
Pyloric stenosis	4 (1 )	2 (0.5 )	3 (0.47 )	9 (0.6)
More than one finding	112 ( 28)	119(30 )	220 (34 )	451 (31)

\* Values are number of patients and percentage of abnormal

For all the endoscopies performed, there were no major complications related to endoscopy. None of the patients had major bleeding that necessitates blood transfusion, aspiration, perforation or cardio-respiratory arrest. There was no reported shivering or fever due to transient bacteraemia as a complication post endoscopy. Minor complications according to frequency were throat discomfort in 564 (15%) patients, gastric fullness in 168 (5%) patients and minimal bleeding post mucosal biopsies that stopped within minutes of the procedure in 23 (0.6%) patients (Table IV).

**Table IV.** Complications reported during the study period

<b>Complications</b>	<b>Number</b>	<b>%</b>
Throat discomfort	564	15
Gastric fullness	168	5
Minimal bleeding (stopped within minutes of the procedure)	23	0.6

## Discussion

PRHH is located in Irbid governorate in the north of Jordan and is one of seven peripheral Hospitals related to the Royal Medical Services. It is a teaching hospital, receives referrals from all health sectors in different parts at the north. It serves the armed forces and their dependents covering at least 60% of the population in northern Jordan (about 1,500,000).

Endoscopy unit at PRHH is the first open-access upper endoscopy service related to the Royal Medical Services, established in March 2001. The

idea from introduction of the open-access upper endoscopy was the reduction of waiting time for upper endoscopy, decrease the load of referral to King Hussein Medical center, as well as an easy available endoscopy services in the northern part of Jordan.

Gastroscopy was safe and well tolerated in this study as with other open-access upper endoscopy service.<sup>(5-8)</sup> There were no major complications, such as major bleeding or perforation. Minor complications were noticed in a minority of the patients in the form of throat discomfort, gastric fullness and minimal bleeding. The endoscopist is basically an internist who can offer good care and preparations for patients during the endoscopy to ensure the safety of the procedure and can manage patients with history of valvular and structural heart diseases and those on anticoagulants. In addition, he can give attention to and cover them by use of antibiotics and adjust their anticoagulant therapy.

Normal examination was a frequent finding (61%). This is one of the usual characteristics of open-access upper endoscopy service when the patient is not evaluated by a gastroenterologist, and where the negative result is of value as the positive one, that gives relief for the patient and his physician.<sup>(8)</sup> This high percentage of normal endoscopy may reflect the improper and fast evaluation by non-experienced physicians, weak indications or referring for endoscopy to relieve patients stress, or high prevalence of normal endoscopy reflux disease (NERD)<sup>(9,10)</sup> as 59% of our patient were referred because of epigastric pain.

Duodenal erosion was the most common abnormal finding all over the duration of the study period. This may be explained by our patient sample, as most of them are healthy young males, where other findings are less common.<sup>(11,12)</sup> In comparison with other studies,<sup>(13,14)</sup> hiatus hernia also was a frequent finding (21%), especially in patients presenting with heartburn, and otherwise normal endoscopy. We do not know whether hiatus hernia is more common in our locality, or we were over diagnosing this abnormality due to miss interpretation of different endoscopic gastro-esophageal junction abnormalities.<sup>(14)</sup> Esophageal varices, esophageal candidiasis, and pyloric stenosis were detected in low percentage in comparison with other abnormal findings. As mentioned before we were dealing mostly with young healthy subjects and at the same time, severely ill and chronic liver disease patients usually are referred and endoscoped in the gastroenterology unit at King Hussein Medical Center.

Detection of gross pathology as gastric or esophageal cancers was accurate with good relation with the histopathological diagnosis. About one in five patients diagnosed with cancer had no alarm symptom while he had an early detection of cancer because of easy and fast referral for doing the endoscopy. One third of the patients had more than one abnormal finding. Most of the endoscopic findings were amenable to drug treatment such as duodenal erosions, duodenal ulcers and oesophagitis.

Endoscopy revealed a finding explaining patients' symptoms in most of the examinations, whether it was normal or abnormal. In 80% of patients symptoms (except dysphagia) were predicting the endoscopic finding, which may indicate that upper gastrointestinal symptoms in most of the cases can give a good idea about the endoscopic outcome in this service. Dysphagia in our patients was a frequent complaint, but in most cases (73%), the endoscopy was normal. Dysphagia was predictive of endoscopic finding in only 27% of patients, which is different from other studies,<sup>(15-20)</sup> where dysphagia was a good predictor for the endoscopic finding. In the management of patients with dysphagia, it is well known that with a significant history suggesting mechanical obstruction endoscopy will be helpful in establishing a diagnosis because it is more sensitive in detecting mucosal lesions such as minor ulcerations and less severe changes of reflux.<sup>(16)</sup> Endoscopy is quite sensitive at

detecting strictures less than 10 mm in diameter but slightly less sensitive for wider strictures. Endoscopy may not detect tapered narrowing of the esophagus when the lumen is wider than the endoscope and there is no associated mucosal abnormality. Neither endoscopy nor radiography is totally accurate in all situations and they are not interchangeable. Often the two are complementary and both are operator-dependent.<sup>(17)</sup> If endoscopy shows no obvious abnormality, a diagnosis of a primary motility disturbance of the esophagus or functional esophageal disorders should be considered.<sup>(18,19)</sup> Careful exclusion of structural lesions is essential before assigning a functional diagnosis. Negative endoscopic evaluations should be followed by manometry.<sup>(20)</sup>

It is traditionally believed that a specialist consultation can select suitable patients for upper endoscopy and so a better diagnostic yield. However, it is generally agreed nowadays that attempts to justify the service by assessing the diagnostic yield are not appropriate. A negative endoscopic finding is as important as a positive one in the management strategy of upper gastrointestinal symptoms that both will resolve the patient's complaints<sup>(21,22)</sup> which elevate further referrals to other physicians and decreases waste of time and money. This makes upper endoscopy is socio economically accepted as well as cost effective in patients presented with epigastric pain.

In evaluating the workload in form of the numbers of endoscopies performed in our open-access upper endoscopy unit (Table 3), it is clearly noticed that workload has considerably increased during the last 2-years time period (51%), and even more than the first 4 years of its establishment (49%). This may be explained by the open-access upper endoscopy service becoming more popular with increased confidence of the patients in the services from the patients feedback themselves, by the increased financial burden on patients in the north of Jordan to have the endoscopy done at King Hussein Medical center in the capital Amman, by the increased number of endoscopists from two to three, and finally, by the subdivision of the Royal Medical Services into three geographical districts (middle, south, and north) making possible the referral to King Hussein Medical center only complicated cases.

In evaluation of the physicians and patients satisfaction, we noticed that most of the referring

physicians' opinions about open access upper endoscopy service at PRHH were that it is easy to deal with, gives rapid answer for the patients' complaints and therefore less visits to different clinics was required. Patients themselves when offered referral to King Hussein Medical center also preferred the open-access service, because of shorter waiting times and lower financial burden because it cost them about 15 US Dollar for each time he/she went to the capital Amman to be seen by a gastroenterologist at King Hussein Medical Center.

Open-access upper endoscopy provides strong reassurance for physicians and patients, should lead to less empirical treatment, and reduced prescribing costs.<sup>(23)</sup> The economic appeal of the open-access upper endoscopy is obvious: bypassing outpatient departments probably decreases the cost of referral.<sup>(24)</sup> Open-access upper endoscopy could reduce the workload of medical specialists.<sup>(25)</sup> Additional benefits would be the elimination of unnecessary outpatient attendance and increased time allocation to individual patients who require specialist consultation. It gives a rapid and definitive diagnosis, which satisfies both patients and physicians.<sup>(26-32)</sup>

## Conclusion

Our results showed that indications for gastroscopy should not be too strict. Gastroscopy should be regarded as a useful, safe, and effective examination in patients who have upper gastrointestinal complaints. Open-access upper endoscopy service may offer a rapid and definitive diagnosis that is reassuring to both patient and clinician and so significantly shorten the waiting time for the patient to receive treatment. We believe that open-access upper endoscopy can reduce the workload of medical specialists, saving time and money and therefore should be more widely advocated.

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