

# Endoscopy Of Upper Digestive Emergencies, A Great Challenge For A University Hospital Located In A Regional Hospital Center

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## Abstract

**Background:** Performing upper gastrointestinal endoscopy (UGIE) in an emergency situation is a routine procedure in gastroenterology. It allows the diagnosis and treatment of case of upper GI emergency. The patient's prognosis is generally at stake, so it must be performed within the recommended time frame and under good conditions, by a trained team using adequate equipment. It can present major challenges for a tertiary service located in a regional hospital center. This article raises the current challenges faced as a tertiary service located in the Mohamed VI regional hospital, and are: - Access to endoscopy is difficult, as there is no endoscopy unit in the emergency room - difficulties in preparing and transferring patients for exploration in another facility located 5 km from the emergency room. - The shortage of therapeutic material. All these factors are generally at the origin of the delay of the exploration and the management of the patients in optimal conditions.

**Materials and Methods:** A descriptive epidemiological study, retrospective and prospective study, spread over 5 months (from May 2022 to September 2022), including patients who consulted at the Mohamed V hospital emergency department for an upper digestive emergency (Upper gastrointestinal bleeding, ingestion of a foreign body or caustic substances). The data is extracted from endoscopy registers, for patients who have not benefited from endoscopy their data is collected from the emergency register, through the operating sheet, analyzed by Excel software.

**Results:** 164 patients were included in our study. The main indications for emergency upper gastrointestinal endoscopy were dominated by Upper gastrointestinal bleeding (UGIB) (hematemesis and/or melena) in 73% (n=120), caustic ingestions in 10 % (n=16), and ingestion of foreign bodies in 17 % (n=28).

### During HDH

A total of 120 patients were admitted to the emergency room of Mohamed V hospital for UGIB (hematemesis and/or melena). The mean age was 50,23 years (08-87 years), average duration of transfusion was 29 hours. In the presence of clinical signs of portal hypertension, the ligation kit is provided by the patient within an average of 44 hours. Fibroscopy was performed in 100 patients (83%), and 20 patients (17%) left the emergency room without endoscopic exploration. The average time elapsed between the admission of the patients and the realization of the endoscopy was 41 hours, 80% of our patients were explored between 24 and 72 hours, 5% before 24 hours and 5% after 3 days of stay in the emergencies. It showed peptic ulcers in 53 patients (53%), esophageal varices in 40 patients (40%), four patients (4%) had acute lesions of the esophageal mucosa and the remaining 3 patients (3%) had ulcero-budding lesions. Therapeutically; 45 patients having benefited from a haemostatic gesture, including 39% having a ligation of oesophageal varices, injection of biologic colle in 1%, a haemostatic injection in 4%, one association injection and clipe, and 51 patients did not benefit from an endoscopic procedure, these were Forrest stage III ulcers. Three patients required surgery (including a Forrest Ia ulcer) and there was only one death in our study.

### During ingestion of foreign body

It was found in 28 patients, mostly in the pediatric population in 60% of cases, requiring intubation in the operating room. Ingestion was accidental in 79%, intentional in 4% of cases, and the remaining 17% occurred under unknown conditions. Only 24 patients were explored, while the remaining four voluntarily left the emergency department before endoscopic exploration. The mean delay for endoscopic exploration was 34 hours, which was generally due to a 70% delay in consultation and unavailability of the ambulance responsible for transferring patients from the emergency department to the endoscopy room within an average of 5 hours. There was a predominance of coins (61%), pins (14%), dentures (7%), and other objects (19%). Endoscopic extraction was performed using diathermic loop in 42%, basket in 33%, forceps in 17%, and tripod in 8%. No cases required surgical intervention.

*During caustic ingestion*

*In total there were 16 caustic ingestions, with mean age of 28 years, women are more concerned than men, with a sex ratio of 0.6 (M/F)*

*suicide attempts were frequent in 58% of the patients, all of whom had a documented psychiatric history; and in 42% the ingestion was incidental. In our series, bleach is the most commonly ingested at 81, 25%. In second place is HCL with a percentage of 12,5% and 6,25% of ingestions are of potassium chloride. Thoraco-abdominal CT scan, performed on three patients with respiratory symptoms. The average time from admission to upper GI endoscopy was 23.6 hours. Seven patients (60%) were explored within 24 hours, three between 24-72 hours and 17% had UGIE only after three days. It wa revealed digestive lesions, classified according to the classification of Zargar grade I, IIA, IIB, IIIB in 33%, 42%, 4%, and 21% of cases respectively Table 4. Treatment was conservative in all patients, 3 patients (21%) with IIIB lesions requiring surgery for placement of jejunostomy. all patients with esophageal grade IIA, IIB or IIIA, regardless of site, underwent follow-up UGIE. Generally we note a good evolution of our patients, including the improvement of initial lesions, nevertheless, one patient developed an esophageal stenosis, dilated several times and then benefited from an esophageal prosthesis complicated after one year by an esotracheal fistula and then detected by respiratory distress.*

**Conclusion:** *Endoscopy in upper digestive emergencies is a multidisciplinary procedure. Its efficiency, which is a guarantee for a good prognosis, is conditioned by the delays, the conditions, and the availability of material and by the expertise of the team. Our major challenges: long delays, non-availability of therapeutic materials.*

*Our hope is to improve the emergencies by implanting a well-equipped endoscopy unit within the emergencies, to simplify the circuit of the patients within the framework of the new reform "territorial sanitary grouping "TSG".*

**Key Word:** *emergency, upper digestive endoscopy, indications, Challenges*

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## I. Introduction

Emergency upper digestive endoscopy is an essential act in gastroenterology, particularly in the presence of upper gastrointestinal bleeding (UGIB), caustic product ingestion (CP), or ingesting foreign bodies (FB). It is carried out within 24 hours from patient's presentation, but sometimes the deadline must be less than 12 hours or even immediately in less than 2 hours, compared to routine endoscopy, it is performed outside working hours or weekends and holidays[1]. The patient's vital prognosis is generally engaged, with significant morbidity and mortality, so endoscopy must be carried out within the recommended time frame and in adequate conditions, by a trained team using efficient equipment. These conditions can be difficult for a university service located in a regional hospital and therefore constitute a great challenge for the optimal care of patients.

## II. Material And Methods

This descriptive epidemiological study, retrospective and prospective, spread over 5 months (from May 2022 to September 2022), including patients who consulted at the Mohamed V hospital emergency department for an upper digestive emergency (Upper gastrointestinal bleeding, ingestion of a foreign body or caustic substances). The data is extracted from endoscopy registers, for patients who have not benefited from endoscopy their data is collected from the emergency register, through the operating sheet, analyzed by Excel software.

## III. Result

In our study, 164 patients were collected, Mean age 35 years (range 1, 5 - 87 years), 56 % male, and 44 % are female, sex ratio 1, 27M/F. Demographic characteristics vary according to the reason for consultation. The main indications for emergency upper gastrointestinal endoscopy were dominated by Upper gastrointestinal bleeding (UGIB) (hematemesis and/or melena) in 73% (n=120), caustic ingestions in 10 % (n=16), and ingestion of foreign bodies in 17 % (n=28). Among these patients 136 (83%) are benefited from an endoscopy distributed as follows: 100 UGIB, 24 FB and 12 IC, the 28( 17%) patients left the emergency room on their own without any support

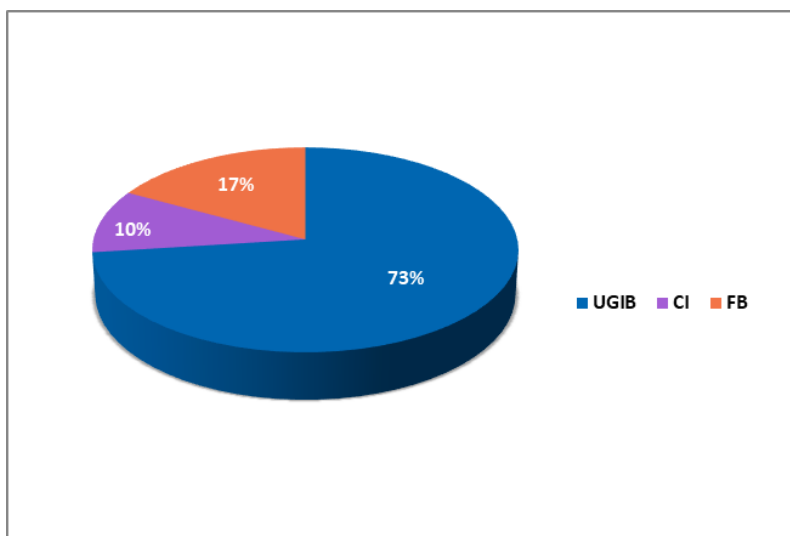
### During HDH

A total of 120 patients were admitted to the emergency room of Mohamed V hospital for UGIB (hematemesis and/or melena). The mean age was 50,23 years (08–87 years)(Figure 1), average duration of transfusion was 29 hours (Figure 3). In the presence of clinical signs of portal hypertension, the ligation kit is provided by the patient within an average of 44 hours. Fibroscopy was performed in 100 patients (83%), and 20

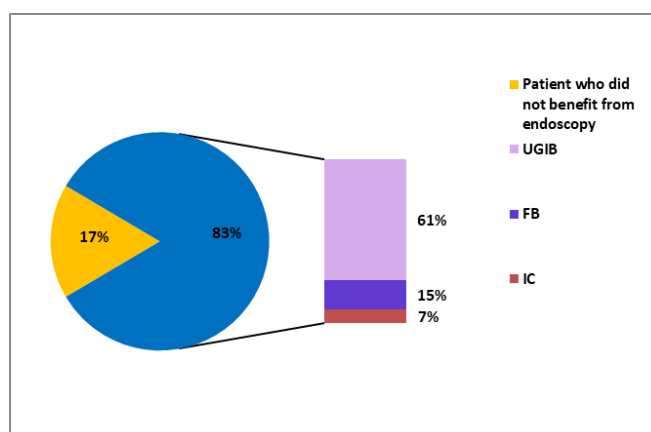
patients (17%) left the emergency room without endoscopic exploration. The average time elapsed between the admission of the patients and the realization of the endoscopy was 41 hours, 80% of our patients were explored between 24 and 72 hours, 5% before 24 hours and 5% after 3 days of stay in the emergencies(Figure 4), it showed peptic ulcers in 53 patients (53%), esophageal varices in 40 patients (40%), four patients (4%) had acute lesions of the esophageal mucosa and the remaining 3 patients (3%) had ulcero-budding lesions. Therapeutically; 45 patients having benefited from a haemostatic gesture, including 39% having a ligation of oesophageal varices, injection of biologic colle in 1%, a haemostatic injection in 4%, one association injection and clipe, and 51 patients did not benefit from an endoscopic procedure, these were Forrest stage III ulcers. Three patients required surgery (including a Forrest 1a ulcer) and there was only one death in our study.

	UGIB(n=120)	FB(n=28)	CI(n=16)
<b>Age :</b>			
<5 years	n= 0	n= 10	n= 7
5- 10 years	1	9	0
11-15 years	1	1	2
16-20 years	3	0	0
21- 25 years	10	1	6
26- 50 years	45	3	1
>50 years	60	4	0
Mean age	50	15	28
<b>Gender:</b>			
Female	45	17	10
Male	75	11	6
Sexe Ratio (M/F)	1,6	0,6	0,6

**Table 1:** Demographic characteristics of population.



**Figure 1:** indication of emergency upper gastrointestinal endoscopy



**Figure 2:** Distribution of patients according to whether or not they benefited from a FOGD

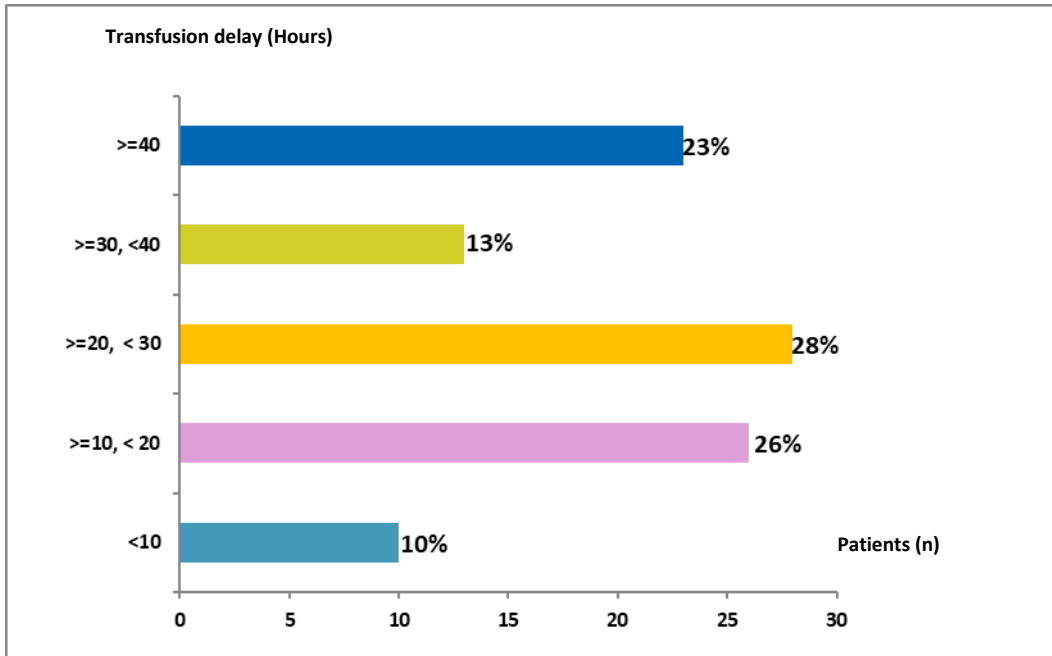
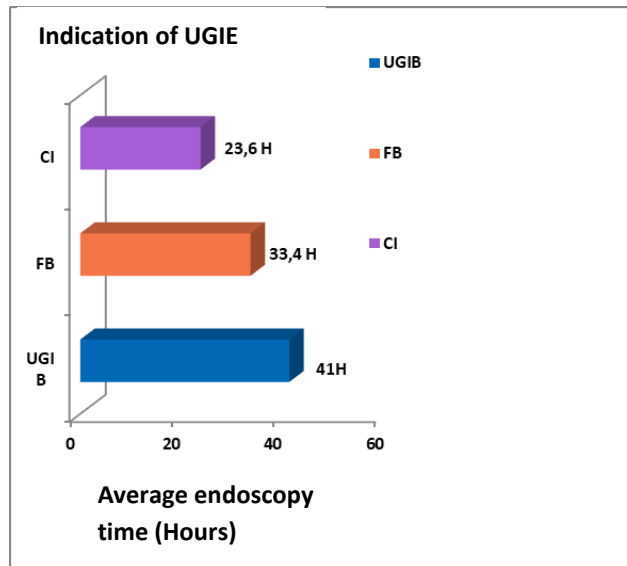


Figure3: Transfusion delay among our population with upper gastro intestinal bleeding.



a)

b)

	<24H	24-72	>72
Patients	5% (n=5)	80% (n=80)	5% (n=5)

Figure 4: a) Average time from presentation to UGIE. b) Time to endoscopic exploration in patients with UGIB.

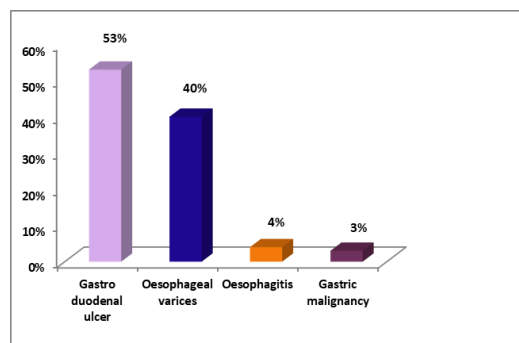
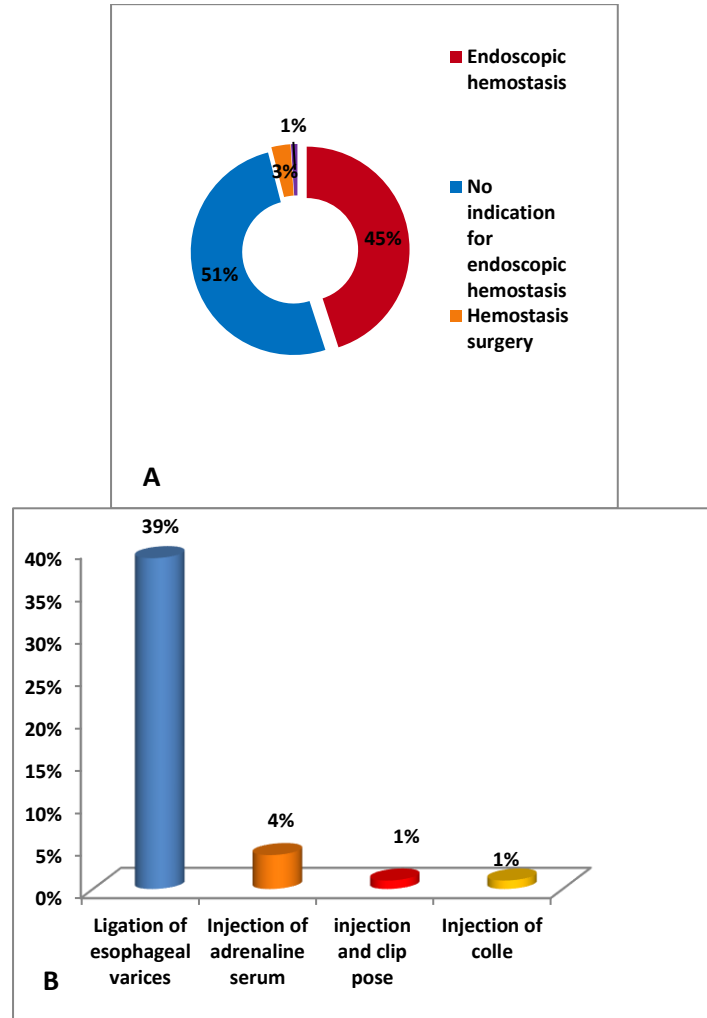


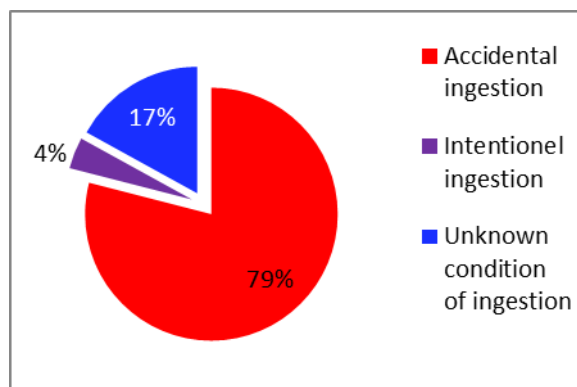
Figure 5: Endoscopic findings in patients with upper gastrointestinal bleeding.



**Figure 6: A) Management of patients with UG; B) Endoscopic treatment in patients with upper gastrointestinal bleeding.**

**During ingestion of foreign body**

It was found in 28 patients, mostly in the pediatric population in 60% of cases, requiring intubation in the operating room. Ingestion was accidental in 79%, intentional in 4% of cases, and the remaining 17% occurred under unknown conditions (Figure 7), only 24 patients were explored, while the remaining four voluntarily left the emergency department before endoscopic exploration. The mean delay for endoscopic exploration was 34 hours (Table 2), which was generally due to a 70% delay in consultation and unavailability of the ambulance responsible for transferring patients from the emergency department to the endoscopy room within an average of 5 hours. There was a predominance of coins (61%), pins (14%), dentures (7%), and other objects (19%) (Table 3). Endoscopic extraction was performed using diathermic loop in 42%, basket in 33%, forceps in 17%, and tripod in 8% (Figure 8). No cases required surgical intervention.



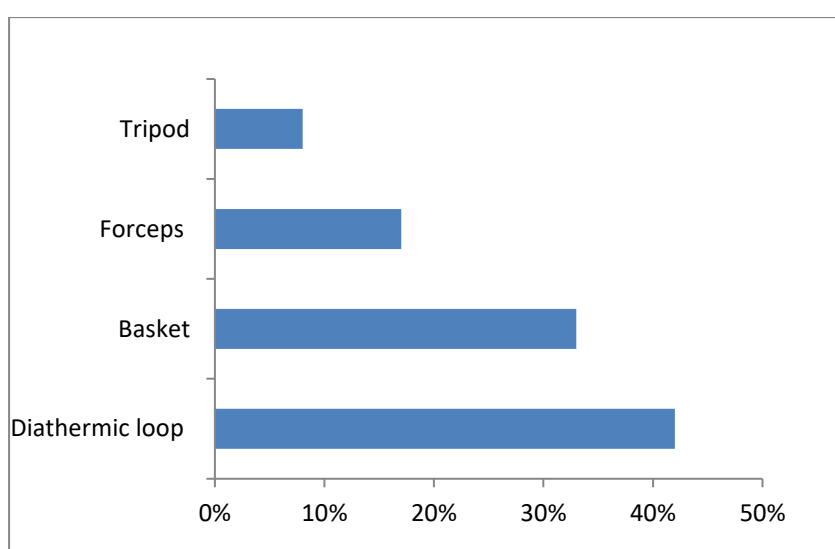
	<24H	24-72	>72
Patients	60%	23%	17%

**Figure 7:** The Circumstances of ingestion.

**Table 2:** Time of extraction of foreign body.

Foreign body			Number of cases
Nature	Size(Cm)	Number	
coins	3	1 2 for one patient	17(61%)
pin	4	1	4(14%)
dentures	2	1	2(7%)
Bone	5	1	2(7%)
keyring	4	1	1(3%)
food bezoid	3	1	2(7%)

**Table 3:** Characteristics of foreign bodies.

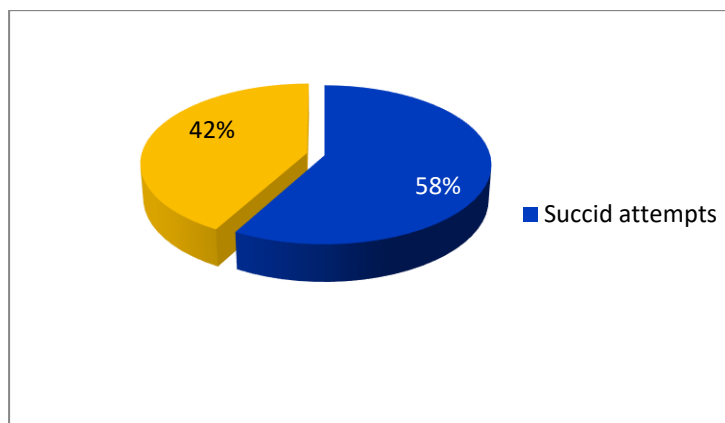


**Figure 8:** Means of extraction adopted

**During caustic ingestion**

In total there were 16 caustic ingestions, with mean age of 28 years, women are more concerned than men, with a sex ratio of 0.6 (M/F) Table 1

suicide attempts were frequent in 58% of the patients (Figure 9), all of whom had a documented psychiatric history; and in 42% the ingestion was incidental. In our series, bleach is the most commonly ingested at 81, 25%. In second place is HCL with a percentage of 12,5% and 6,25% of ingestions are of potassium chloride (Tableau 3). Thoraco-abdominal CT scan, performed on three patients with respiratory symptoms. The average time from admission to upper GI endoscopy was 23.6 hours. Seven patients (60%) were explored within 24 hours, three between 24-72 hours and 17% had UGIE only after three days. It was revealed digestive lesions, classified according to the classification of Zargar grade I, IIA, IIB, IIIB in 33%, 42%, 4%, and 21% of cases respectively Table 4. Treatment was conservative in all patients, 3 patients (21%) with IIIB lesions requiring surgery for placement of jejunostomy. all patients with esophageal grade IIA, IIB or IIIA, regardless of site, underwent follow-up UGIE. Generally we note a good evolution of our patients, including the improvement of initial lesions, nevertheless, one patient developed an esophageal stenosis, dilated several times and then benefited from an esophageal prosthesis complicated after one year by an esophageal fistula and then detected by respiratory distress.



**Figure9:** Distribution of patients according to the circumstances of ingestion

Caustic product	Number of cases	Percentage
Bleach	13	81,25%
Hydrochloric acid.	2	12,5%
Potassium chloride	1	6,25%

**Table 3:** Different products involved

Location and grade of damage	Oesophagus	Stomach
Grade 0	0%	75%
Grade I	33%	4%
Grade II A	42%	0%
Grade IIB	4%	21%
Grade IIIA	0%	0%
Grade IIIB	21%	0%
Grade IV	0%	0%

**Table4:** The endoscopic lesion assessment.

#### IV. Discussion

Performing emergency UGIE for a tertiary service located in a regional center can present various challenges.

In this work we presented our experience and results in patients admitted to the emergency department of the Mohamed V regional hospital for upper digestive emergencies (UGIB, ingestion of FB or CP).

For the demographics of our study population, we agree with most studies on upper endoscopic emergencies[2–6]

The average age of patients admitted for upper GI bleeding was around 50 years, the young adult population with socio-economic and/or family problems is the most concerned by the ingestion of caustic products with an average age of 30 years.[4,7] For the ingestion of foreign body our population is mixed between children and adults with an average age of 15 years, for the series of Togo S[8]. On a pediatric population the average age is 6 years.

For the gender variable, men are the most concerned by UGIB, women by the ingestion of caustic and foreign bodies. Upper GI bleeding was the most frequent reason for consultation in more than two thirds of our patients, which is consistent with the data in the literature[6,9–13].The ingestion of foreign body occupies the second place in our series while the ingestion of caustic and the second reason for most of the series[6,14], this can be explained by the fact that we make the pediatric population in our service, in which the ingestion of foreign body in the oral phase of life is widely frequent.

According to our series, 17% of the patients admitted to the emergency room leave without any exploration, even if the advice of the duty team indicates an endoscopy, this can be explained by the fact that the waiting time before the transfer to the endoscopy room installed in another hospital located 5 km away from the hospital. Sometimes the anaesthetic consultation can delay the procedure further, especially in front of a single team of resuscitators who provide the consultation, the block resuscitation ... And the patients are directed towards the liberal sector. Transfusion delays appear to be longer, since only 36% of the patients who required a transfusion were transfused within 24 hours, with an average delay of 38 hours. This is due to the frequent shortage of blood at the regional transfusion center.

For endoscopic exploration, since we don't have an endoscopy unit in the emergency room, the patient is transferred to another hospital where the endoscopy is performed in an average time of 5 hours between waiting for the ambulance and the trip between the two hospitals.

The time frame for performing endoscopy has been long debated, it has been the subject of several recommendations, particularly in cases of UGIB. On the one hand, it should be done as soon as possible to control an active hemorrhage. On the other, the quality of the examination depends on the preparation of the patient, so there is time to stabilize the patient and optimize gastric vacuity.

In our study, 80% of our patients received a UGIE between 24 and 72 hours.

In the Marrakech and Casa series[6,14], UGIE is generally performed within 24 hours. Whereas in the sub-Saharan context, most of UGIE (80%) are performed after one week and none are performed within 24 hours[2]. The learned societies recommend the exploration of a non-varicose digestive hemorrhage within 24 hours, whereas varicose hemorrhage must be explored within 12 hours after stabilization of the patient[15,16].

For endoscopic hemostasis, more than half of our patients did not require hemostatic procedures at the time of the endoscopy, which was generally delayed, thus missing the chance to intervene early. The patients with varicose hemorrhage (n=39) benefited from esophageal varicose ligation, an injection of biological glue for a patient with a subcardial varicose vein, after the patient had procured the material himself, with a significant delay. Bleeding was active at the time of endoscopy in only 7% (n=7) of our patients with non-varicose haemorrhage, three of whom benefited from injection of adrenaline serum due to lack of means to obtain a clip, only one patient benefited from injection and placement of a clip. And three other patients were referred to surgery after failure of hemostasis by the means available to us (adrenaline serum), no patient benefited from thermo coagulation for lack of material.

The majority of the ingested foreign bodies were coins of average size, the endoscopy made generally in the operating room obliging the waiting of a time margin next to the surgical specialities. The extraction by the diathermic loop, basket, or tripod is frequently done within 24 hours in 60 to 80% rarely between 24 and 72 hours, is exceptionally after 3 days, which is consistent with other studies, and with the recommendations[6,17–19]

The upper digestive endoscopy is a decisive act for management of patients victim of caustic ingestion. It specifies the nature, the topography and the extent of the lesions, and their evolution. Thus endoscopy is a diagnostic and prognostic element. The ESGE has specified that it must be directed by the symptoms and must be performed within 24 hours, the SFED recommends endoscopic exploration between 6 hours and twenty-four hours after ingestion[10]. Indeed, an early realization can underestimate the lesions. On the other hand, a late endoscopy is difficult to perform, it can be hindered by the presence of edema or hemorrhage and or necrosis at the level of the aerodigestive tract. The injected cervico-thoraco-abdominal CT scan, performed in only three patients in our study, tends to replace endoscopy and seems to be more sensitive for the detection of intraparietal necrosis lesions.[20].

In our series, endoscopic exploration in case of caustic ingestion was performed between 24 and 72 hours in more than 2/3 of the cases, within 24 hours in 1/3 of the cases, we note a delay in exploration compared to other studies on caustic ingestion[4,6,21,22].

Bleach is the product most frequently ingested by our population, and the endoscopic lesions were benign and improved spontaneously or by a short fasting period of one week associated with medical treatment. Nevertheless, three patients who ingested either hydrochloric acid or potassium chloride with a suicidal aim had necrotic lesions in the oesophagus and gastric tract, indicating a surgical treatment but the current technical platform is not adapted, the patients then benefited from a feeding jejunostomy with a good improvement after endoscopic control in 2 patients, unfortunately the third patient had developed an esophageal stenosis that was dilated several times without improvement and then benefited from an esophageal prosthesis, died in a respiratory distress following an esotracheal fistula.

## V. Conclusion

Endoscopy in upper digestive emergencies is a multidisciplinary procedure. Its efficiency, which is a guarantee for a good prognosis, is conditioned by the delays, the conditions, and the availability of material and by the expertise of the team. Our major challenges: long delays, non-availability of therapeutic materials.

Our hope is to improve the emergencies by implanting a well-equipped endoscopy unit within the emergencies, to simplify the circuit of the patients within the framework of the new reform "territorial sanitary grouping "TSG"

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