JABALPUR SCORING TO PREDICT MORBIDITY AND MORTALITY IN PEPTIC ULCER PERFORATION

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INTRODUCTION:

Peptic ulcer perforation is one of the acute abdominal emergencies in the surgical field. Scoring systems are developed to increase evaluation, monitoring and care of the patients including specific adjustments to bring about successful surgical outcome thereby reducing the morbidity and mortality of patients.

AIM:

To assess and predict morbidity and mortality among patients who got operated for Peptic ulcer perforation in Thanjavur Medical College, Thanjavur

OBJECTIVES:

To study the risk factors influencing the post operative outcome

MATERIALS AND METHODS

Jabalpur scoring system was applied for 50 patients undergoing surgery for peptic ulcer perforation

RESULTS:

On applying Jabalpur Scoring Systems in 50 Patients, 17 patients did not have any complications, 29 patients developed various complications and 4 patients died. There were 18 patients with a score in between 0 to 4; 21 patients with a score in between 5 to 9; and 7 patients with a score in between 10 to 14.

KEYWORDS

Jabalpur scoring system, peptic ulcer disease, peptic ulcer perforation

INTRODUCTION:

The ability of the surgeon alone does not decide the outcome of surgical intervention. The patients physiological status, the disease affecting and the status of surgery including the preoperative and postoperative support services will have a major effect on the ultimate outcome.

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Objective classification of the severity of peritonitis helps for planning and surgical approach. Hence there is a need for developing systems specifically for comparing and evaluation preparation of patients affecting the specific ailment.

Scoring systems are developed to increase evaluation, monitoring and care of the patients including specific adjustment to bring about successful surgical outcome thereby reducing the morbidity and mortality of patients. Scoring systems that can compare patients population and severity of illness, objectively predicts mortality and morbidity that will evaluate treatment strategy in patients who required intensive care.

Peptic ulcer perforation is one of the acute abdominal emergencies in the surgical field. The incidence of peptic ulcer disease has been declining for the last 20 years and the need for elective ulcer surgeries is almost extinct. But the need for emergency surgeries that arise secondary to peptic ulcer complications have not significantly changed during the last 15 to 20 years.

Peptic ulcer perforation is the commonest clinical condition resulting in abdominal sepsis in tropical countries. It has an excellent outcome with early resuscitation and surgical repair of perforation. Delay in surgery can lead to various complications including death. Surgery for peptic ulcer perforation is associated with wide ranging mortality rate from as low as 2.3% to as high as 66.7% depending on the absence or presence of risk factor.

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AIM OF STUDY:

To assess and predict morbidity and mortality among patients who got operated for peptic ulcer perforation at Thanjavur Medical College, Thanjavur, between September 2016 to September 2017.

OBJECTIVES

To study the risk factors influencing the post operative outcome.

MATERIALS AND METHODS:

SOURCE OF DATA:

50 patients admitted in Thanjavur Medical College and Hospital undergoing surgery for Peptic Ulcer perforation.

STUDY PLACE:

Thanjavur Medical College Hospital, Thanjavur

STUDY DESIGN:

Prospective observational study

SAMPLE SIZE:

50 Patients

STUDY PERIOD:

September 2016 – September 2017

INCLUSION CRITERIA:

Patients undergoing surgery for peptic ulcer perforation

Age>18 years

EXCLUSION CRITERIA:

1. Patients undergoing surgery for perforation peritonitis due to some causes other than peptic ulcer
2. GIT perforation not involving stomach and duodenum
3. Reperforation in patient who has already undergone surgery for peptic ulcer perforation.

JABALPUR SCORING SYSTEM

The risk factors associated with mortality and morbidity are the following

1. Age
2. Perforation – Operative Interval (P-O interval)
3. Heart Rate
4. Preoperative shock
5. Creatinine
6. Co-morbid illness

JABALPUR PROGNOSTIC SCORING

CO-MORBID ILLNESS – 5

FACTOR	0	1	2	3	4	5	6
P-O INTERVAL	<24	25-72	73-96	97-120	>120	-	-
Mean systolic BP	70-109	70-109	110-129	110-129	>160	-	-
HR	70-109	70-109	110-139	140-179	>180	-	-
Creatinine	0.6-1.4	0.6 – 1.4	1.5 – 1.9	2 – 3.4	>3.5	-	-
Age (yrs)	<45	<45	45 – 54	55- 64	-	65 – 74	>75

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OBSERVATION

1. **SEX DISTRIBUTION:**

MALE	FEMALE	TOTAL
49	1	50

2. **AGE:**

25 – 39 YEARS	40-50 YEARS	>50 YEARS
23	16	11

3. **MORTALITY:**

NUMBER OF PERSONS	NUMBER OF DEATH
50	**04**

4. MORTALITY CAUSES:

SNO	AGE	SEX	CAUSES
1	45 YEARS	MALE	SEPSIS
2	50 YEARS	MALE	RESP. COMP
3	70 YEARS	MALE	SEPSIS
4	45 YEARS	MALE	SHOCK

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5. **SITE OF PERFORATION**

DUODENAL	PYLORIC	ANTRUM
38	8	4

6. **TYPES OF COMPLICATIONS IN SURVIVORS**

WOUND INFECTION	RESP. DISORDERS	SEPSIS	WOUND DEBRIDEMENT	RENAL FAILURE	UTI	ABDOMINAL ABSCESS	LEAK AGE	HYPO
7	6	4	3	3	3	1	1	1

7. **COMPLICATION OF DUODENAL ULCER**

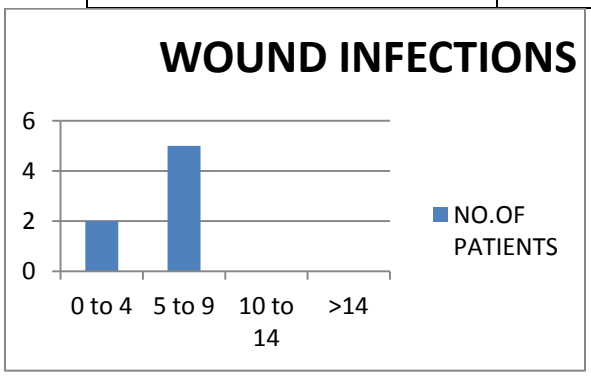
WOUND INFECTION	RESP. DISORDERS	SEPSIS	WOUND DEBRIDEMENT	RENAL FAILURE	UTI	ABDOMINAL ABSCESS	LEAK AGE	HYPO
7	3	3	4	2	2	1	1	1

8. **PYLORIC PERFORATION COMPLICATION:**

UTI	RESPITATORY COMPLICATION
1	3

9. ANTRAL PERFORATION:

TOTAL	RENAL FAILURE
4	1



WOUND INFECTION:

SCORE	NO.OF PATIENTS
0 to 4	2
5 to 9	5
10 to 14	0
>14	0

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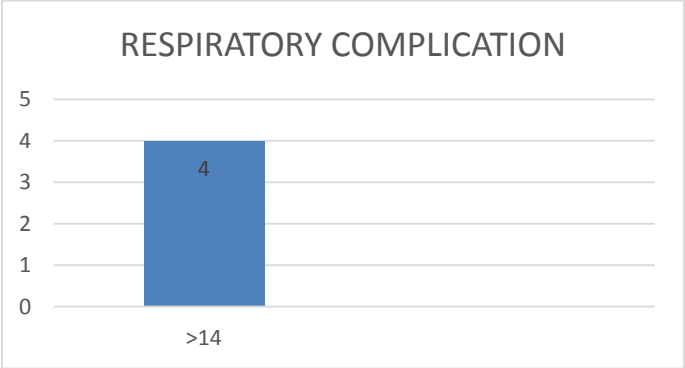
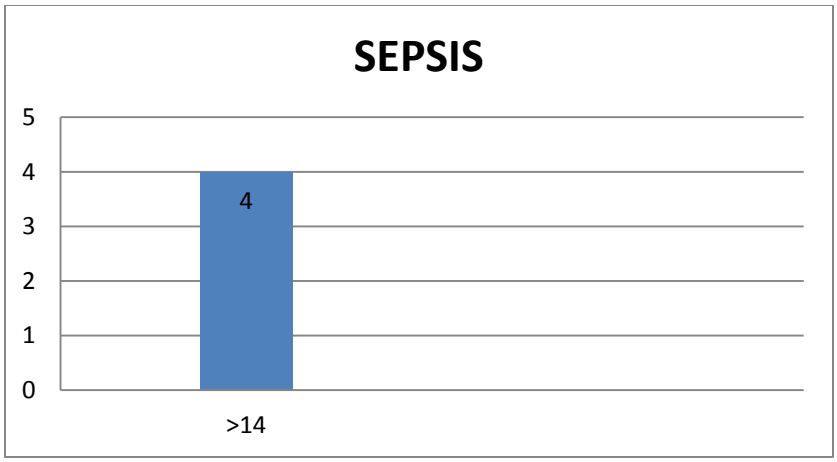
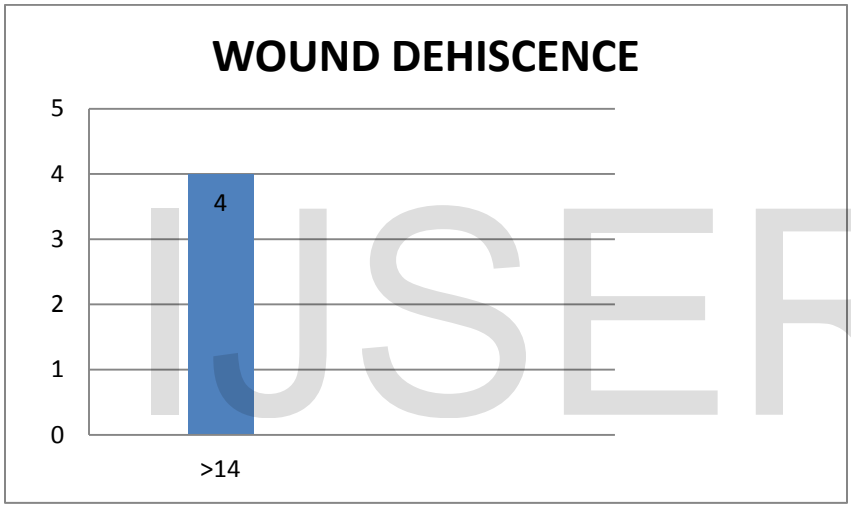
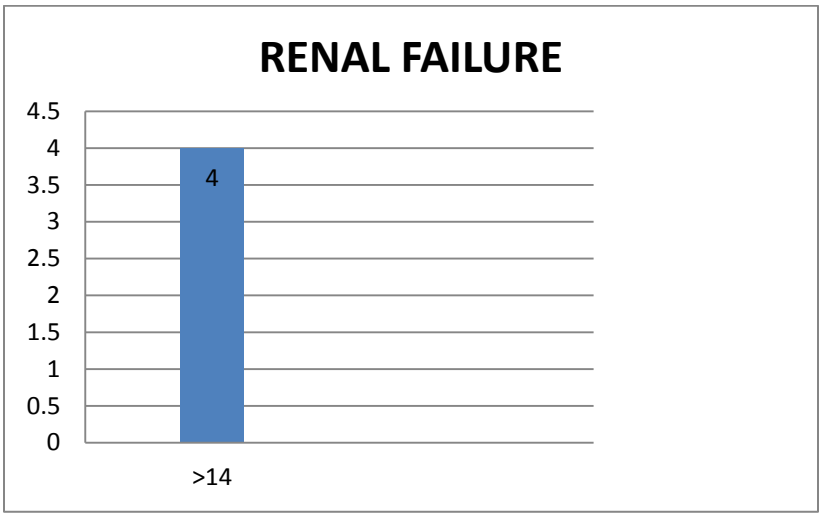


RESPIRATORY COMPLICATION

SCORE	NO.OF PATIENTS
0 TO 4	1
5 TO 9	4
10 TO 14	1
>14	0


SEPSIS
5
4
3
2
1
0
4
>14


WOUND DEHISCENCE
5
4
3
2
1
0
4
>14


RENAL FAILURE
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
4
>14

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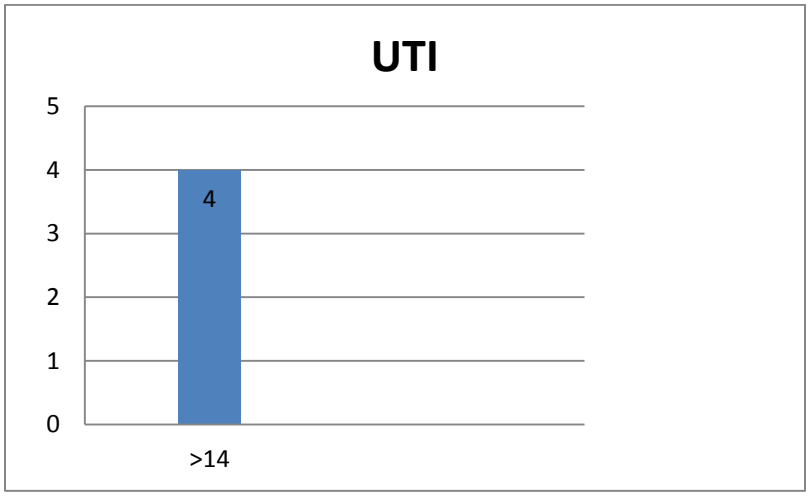

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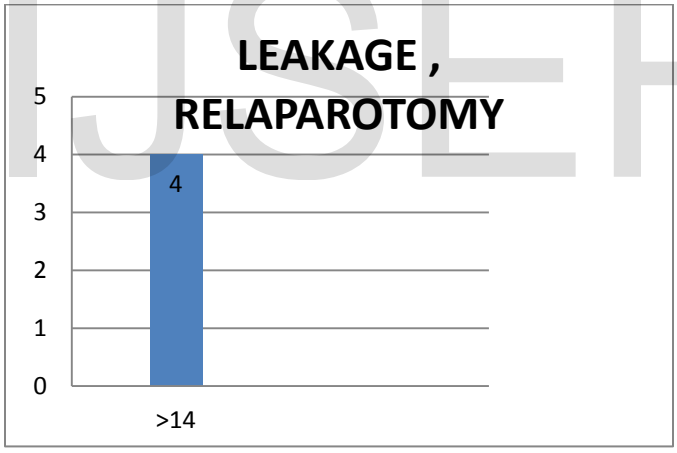

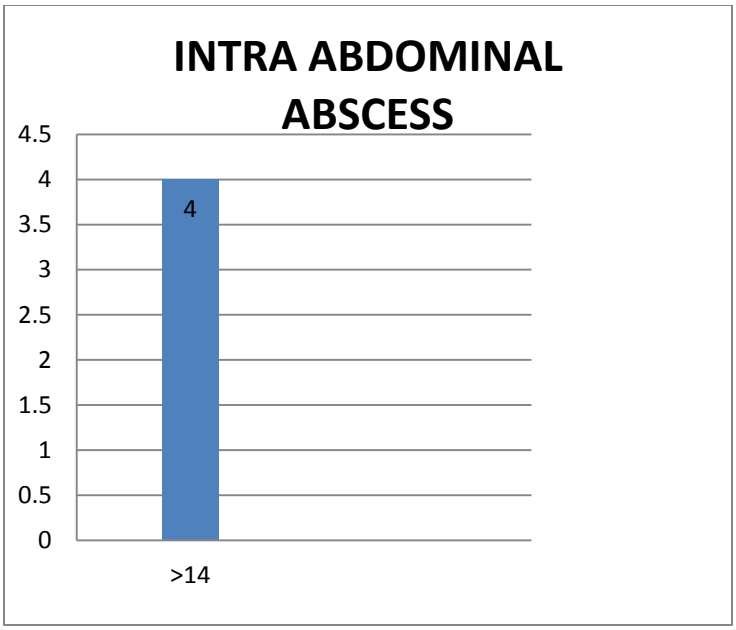

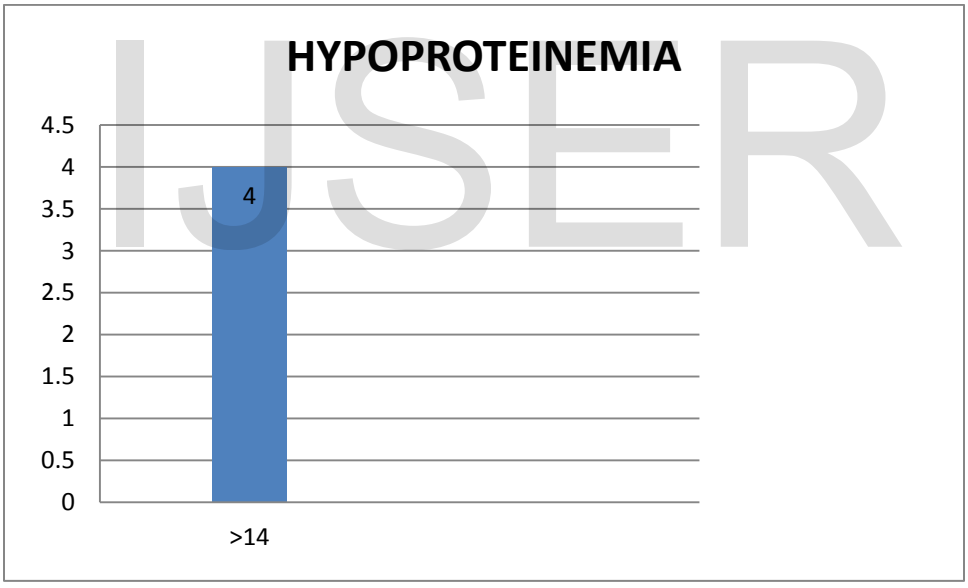

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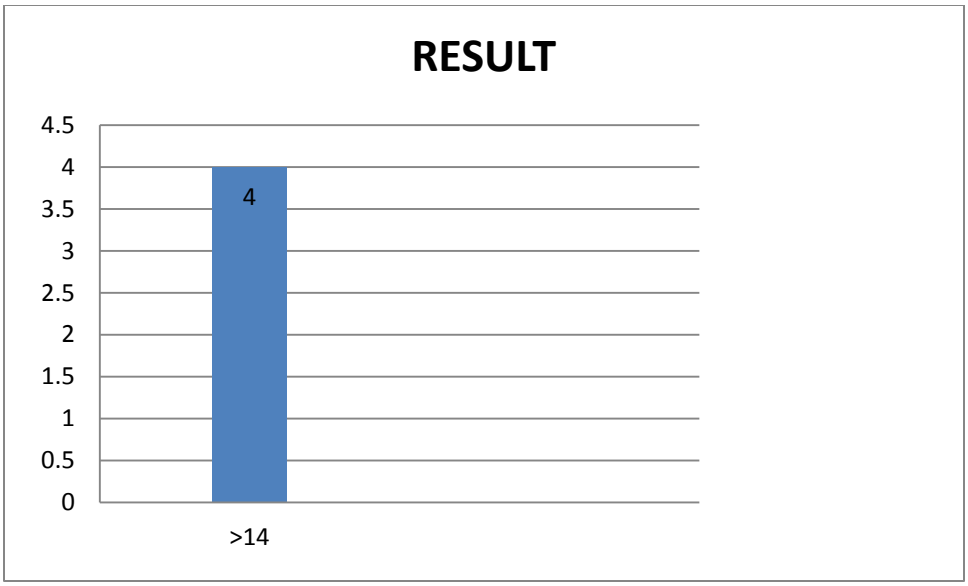
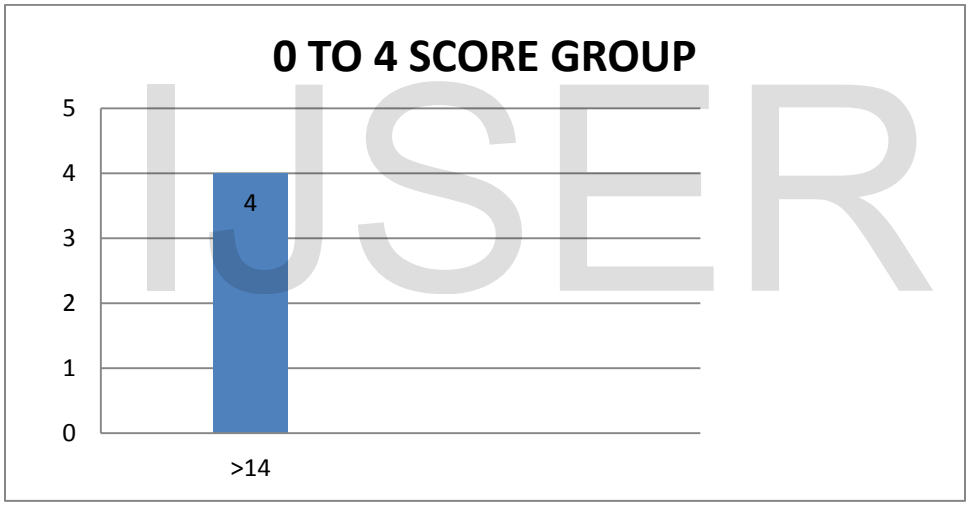
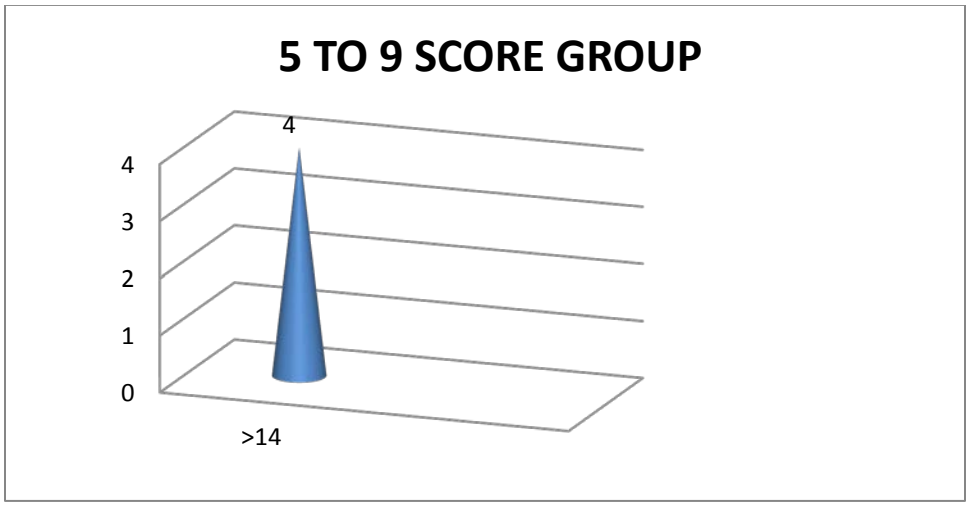
RESULTS


RESULT
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
4
>14


0 TO 4 SCORE GROUP
5
4
3
2
1
0
4
>14


5 TO 9 SCORE GROUP
4
4
3
2
1
0
>14

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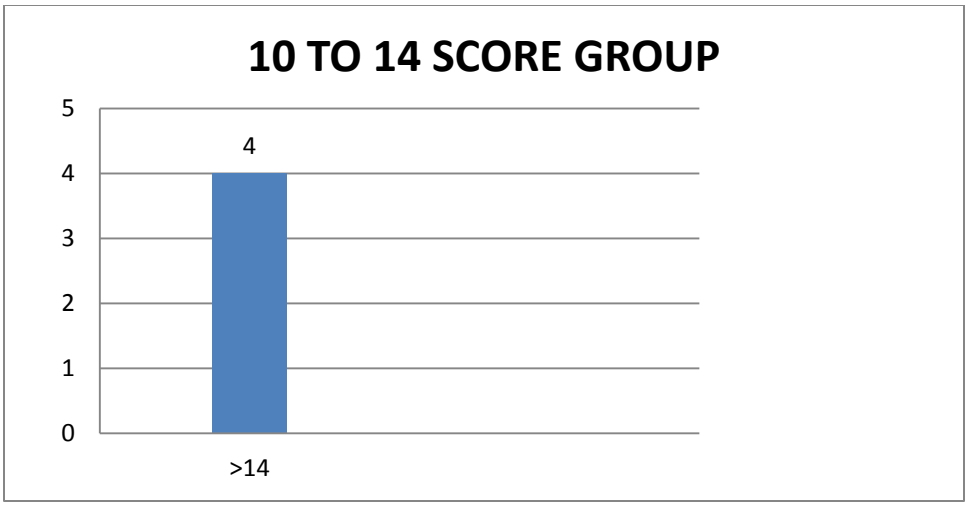

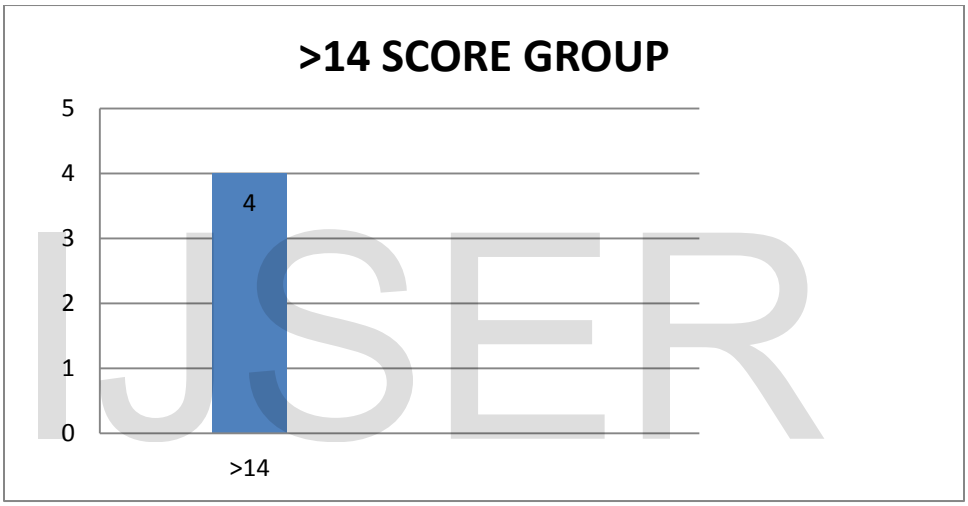

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MEAN DURATION OF STAY

0 TO 4	5 TO 9	10 – 14
9-7 DAYS	13-7 DAYS	17-6 DAYS

ADDITIONAL RISK FACTORS

TOTAL NUMBER	NORMAL	COMPLICATION
35	8	27

NON-SMOKERS

TOTAL NUMBER	NORMAL	COMPLICATION
11	9	2

HYDRATION:

TOTAL NUMBER	NORMAL	COMPLICATION
30	14	16

INADEQUATE HYDRATION:

TOTAL NUMBER	NORMAL	COMPLICATION
16	3	13

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SIGNIFICANCE OF PERFORATION – OPERATION INTERVAL:

24 – 48 HRS	48-72 HRS	>72 HRS
27	13	10

24-48 HRS:

TOTAL NUMBER	NORMAL	COMPLICATION	DEATH
27	9	18	0

48 HRS – 72 HRS:

TOTAL NUMBER	NORMAL	COMPLICATION	DEATH

13	3	10	0

>72 HRS:

TOTAL NUMBER	NORMAL	COMPLICATION	DEATH
10	1	5	4

DISCUSSION:

Peptic ulcer perforation is one of the commonest surgical emergency getting admission in our hospital. Jabalpur prognostic scoring system was applied on 50 patients who presented with peptic ulcer perforation. All the patient underwent emergency explorative laparotomy and perforation closure by Grahams omental patch method with thorough peritoneal lavage and placement of bilateral intraabdominal drain.

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Of the 50 patients, there were 49 male patients and 1 female patient presented with peptic ulcer perforation. Since the incidence of female patient is very low in our study no comparison was made between male and female sex in detail. Our study shows that the incidence of peptic ulcer perforation is higher in males.

Total number of patient in age group between 25 to 39 were 23 patients, in the age group between 40 to 50 were 16 patients and in the age group were 11 patients. This study shows that the incidence of peptic ulcer perforation is common in younger age group, in contrast to the olden days where perforation is common in older age group. The reason for perforation in young patient could be due to smoking. The mean age of the patients, who did not develop any complication is 33.70, the mean of patients who developed complications is 46.20, the mean age of died patient is 52.50.

The duodenal perforation incidence is higher than the incidence of pyloric perforation and antral perforation. There were 38 duodenal perforations, 8 pyloric perforations and 4 antral perforations. All the four patients who died during this study had duodenal perforations.

The overall mean duration of hospital stay in patients with peptic ulcer perforation in our study is 12.7 days, whereas the mean duration of hospital stay with the score between 0 to 4 is 9.7 days, for patients with the score between 5 to 9 is 13.7 days, for patients with the score between 10 to 14 is 17.16 days. This study shows that the duration of hospital stay which is the reflection of all the complications as well as morbidity in a patient due to particular disease also rises linearly with increase in Jabalpur score.

In this study 18 patient had a score between 0-4 , 21 patient had a score between 5-9, 7 patient had a score between 10-14 and 4 patient had a score above 14. In 0-4 group , 11 patient had no complication in the postoperative period and 7 patient developed complications like wound infection, wound dehiscence, respiratory complications , urinary tract infections and sepsis.

In patients with the score between 5-9 majority of the complications occurred which include wound infections, wound dehiscence, respiratory complications, urinary tract infections, renal failure, sepsis and hypoproteinemia. In patients with a score between 10-14, serious complications like leakage, intraabdominal abscess developed in addition to respiratory complications , renal failure and sepsis . All the 4 patients with a score above 14 died. The cause for death being septicaemia in 2 patients, ARDS in 1 patient and shock in 1 patient.

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Wound infection is the most common complication noticed in patient who underwent surgery for peptic ulcer perforation. 2 patients with a score between 0-4 developed superficial wound infections like erythema of wound, mild serous discharge from the wound. 5 patients with a score between 5-9 had purulent discharge from the wound and delayed wound healing.

Respiratory complication is the second most complication among the survivors. 4 patient with a score between 5-9 developed complications like consolidation of lungs , bronchitis and pleural effusion. 1 patient in 0-4 group developed upper respiratory tract infections. 1 patient in 10-14 developed consolidation of lung with minimal pleural effusion.

Sepsis is the next common complication to occur in patients presented with peptic ulcer perforations. The presenting features are rise in temperature, tachycardia, elevated serum bilirubin levels and leucocytosis. 2 patients with a score 5 -9, 1 patient in 0-4 group and 1 patient in 10-14 group develop features of septicaemia.

Wound dehiscence was observed in 3 patients. Patient had sero purulent discharge in 3rd postoperative period, later followed by wound gapping. The wound gapping is superficial not exposing the bowel. Wound dehiscence is noted in 2 patients with a score between 5-9 and patient with a score between 0-4. Fortunately no wound dehiscence was seen in patients with a score between 10-14.

Urinary tract infection was seen in 3 cases. The patients presented with fever with chills, burning micturition, and positive urine culture. 2 patients with a score of 0-4 and 1 patient with a score of 5-9 developed features of urinary tract infection.

Renal failure is the next complication to occur in our study. 1 patient with a score between 10-14 and 2 patients with a score between 5-9 developed renal failure. They presented with pedal edema, decreased urine output and high coloured urine. Blood urea and serum creatinine was found to be elevated. Leakage from the previously operated perforated site is noted in 1 patient with a score of 10-14. There was increased biliary discharge via the drain site during the 4th to 5th post operative day. Since the patient developed the features of peritonitis, relaparotomy was done in the 8th post operative and the perforation site is closed with jejunal serosal patch.

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Intraabdominal abscess and hypo proteinemia were the other two complications developed by the patient in our study. Perforation – operative (PO) interval is given utmost importance in most of the scoring system like POSSUM and JABALPUR scoring system for predicting morbidity in patients with perforation peritonitis, the risk of morbidity increases once the PO interval increases. In this study for 27 patients the PO interval is 24-48 hrs, among them 9 (33.3%) patients did not develop any complications, whereas 18(66.6%) patients developed complications. PO interval for 13 patients in this study is 48-72 hrs, among then 3 (23.7%) patients did not develop any complications whereas 10 (76.9%) patients developed complications. The PO for remaining 10 patients in more than 72 hrs among them 1(10%) patient did not develop complication, whereas 9(90%) patients developed complications and among them 4 died.

This study shows that the complication rate becomes higher when the PO interval increase similar to that of Jabalpur scoring system.

In our study the role of smoking and pre operative hydration status were also included in addition to the regular 6 criteria in the original Jabalpur prognostic scoring system that included PO interval, heartrate, mean systolic blood pressure and serum creatinine and co morbid illness.

Among the 46 survivors 35 patients were smokers and 11 patients were nonsmokers. Out of 35 smokers with perforation peritonitis 27 patients (77.14%) developed complications and 8 (23.7%) patients did not developed any complications. out of 11 non smokers 9 patients(82.21%) did not developed any complications and 2 (18.8%) patients developed complications.

The role of adequate preoperative hydration was studied in the 46 survivors in our study. Out of 46 patients 30 patients received adequate hydration prior to surgery and 16 patients did not get adequate hydration. In patients who were hydrated well, 16 (53.3) patients developed complications. in patients who were adequately hydrated 13(81.25%) developed complications.

This study shows that the morbidity is higher in smokers (77.4%) when compared to non smokers (18.8%). It also shows that the morbidity is more in in adequately hydrated patients (81.25%) than properly hydrated patients (53.3%). So the addition of these 2 above said criteria namely, smoking and hydration may strengthen the ability of Jabalpur scoring system to predict morbidity and mortality in patients with peptic ulcer perforations.

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CONCLUSION

Among the patients studied, the incidence of peptic ulcer perforation is higher in male when compared to females. The younger age patients in the age group of 25 to 39 yr were found to have higher incidence of peptic ulcer perforations. Duodenal perforation is the commonest perforation to occur. The most common complications are wound infection and respiratory complications. Smoking and poor preoperative hydration is associated with increased morbidity. Most dreadful complication to occur is leakage from operative site which is required relaparotomy. Overall mortality is 8%

Jabalpur scoring is found to be fairly accurate prediciting mortality in patients with peptic ulcer perforations. Jabalpur score has significant correlation with the development of complications. Higher the score higher the complications. The morbidity and mortality can be reduced by avoiding delay in diagnosis and treatment, especially in older patients and proper treatment of coexisting medical illness. Jabalpur scoring system is an effective and userfriendly scoring system to predict morbidity and mortality in peptic ulcer perforation in developing countries. Additional parameters like smoking and preoperative hydration may help evaluate the mortality and morbidity more precisely.