



Robotic Assisted Laparoscopic Radical Prostatectomy ; The Early Result of Patients in Siriraj Hospital, Thailand.

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Abstract

Introductions: Prostate Cancer is one of the most commonly diagnosed cancer in men. Treatment options and prognosis depend on the stage of the cancer, the Gleason score, the patient's age and general health. In the patients with clinically localized prostate cancer, Radical Prostatectomy is one of the standard treatment. And laparoscopic approach by robotic assisted has been accepted in many centers around the world. Robotic Assisted Laparoscopic Radical Prostatectomy (RALRP) has been adopted in Siriraj hospital since February 2007.

Objectives: Retrospective study in term of demographic data, perioperative outcomes and postoperative results of patients who underwent RALRP at Siriraj Hospital Bangkok, Thailand since February 2007 - July 2009 was performed to study the perioperative and post operative outcomes.

Material and Methods: A retrospective review of patients with clinically localized and locally-advanced prostate cancer who underwent RALRP in Siriraj hospital between february 2007 to July 2009, All patients were histologic prove adenocarcinoma of the prostate. Patients choose robotic assisted laparoscopic radical prostatectomy for treatment after available options were informed. Demographic data, perioperative data, pathologic data and post operative data were evaluated.

Results: A total number of 357 cases were studied. An average age is 66.89 years old (range = 40-86). Most of clinical presentations are LUTS with high PSA. Their average PSA value is 16.89 ng/ml (range = 1.83-250). 20 patients were treated with hormonal treatment before operation (Neoadjuvant hormonal treatment). The mean operative time and blood loss is 213.20 minutes (range = 90-720) and 471.18 ml (range = 200-2600). Respectively, 27 patients (7.56%) had blood transfusion. Mean hospital stay is 9.19 days (range = 3-40). Perioperative complications occurred in 58 patients (16.24%) which included wound infection, urine leakage, bleeding, pulmonary embolism, UTI and rectal injury. However, there is no perioperative mortality in the series. Pathologically, most of stage is 2b (TMN 2002) and the positive margin rate is 38%

Conclusion: RALRP has already introduced as a viable option of treatment for localized and locally-advanced prostate cancer in Siriraj hospital. The initial results are encouraging in term of low morbidity. However, The cancer control needs to be improved.

Introduction

As known prostate cancer is the most common malignancy in male. It is generally accepted that resulted from Prostate specific antigen (PSA) screening that detected many early stage prostate cancers. The estimated incidence rate of prostate cancer in Thailand is 4.9 per one hundred thousand persons.

Radical prostatectomy is the first treatment used for prostate cancer and has been performed for more than 100 years. It has been one of the standard treatment for localized prostate cancer and nowadays the minimal invasive surgery is one of the options that patient prefer. Laparoscopic radical prostatectomy is now routinely performed in a growing number of center worldwide and since the first report of robotic assist laparoscopic prostatectomy in 1999, robotic surgery has been becoming increase mainstream in united state and abroad for treatment prostate cancer[1,2].

The robotic technology may improve in precision and accuracy of anatomical dissection. It will make the patient gain benefit of minimally invasive surgery. In Thailand robotic assisted laparoscopic radical

prostatectomy was firstly reported in February 2007 at Siriraj hospital. The objective of this study is to review and provide essential information of the demographic data, perioperative outcomes and post-operative results of patients who underwent RALRP at Siriraj Hospital Bangkok, Thailand since February 2007 - July 2009.

Material and methods

A retrospective review of patients with clinically localized and locally-advanced prostate cancer who underwent RALRP in Siriraj hospital between february 2007 to July 2009.

All patients were histologic prove adenocarcinoma of the prostate and using gleason score for grading with TNM staging classification 2010. Patients choose robotic assisted laparoscopic radical prostatectomy for treatment after available options were informed. All patients were given and informed consent for the procedure. Data collection were obtained from patient's note record and information from card and operative note. Demographic data, perioperative data, pathologic data and post operative data were collected and evaluated.

Result

During February 2007 to July 2009, 357 prostate cancer patients underwent robotic assisted laparoscopic radical prostatectomy in Siriraj hospital. An average age is 66.89 years old (range = 40- 86). The most common clinical presentation is lower urinary tract symptom and most of preoperative diagnostic parameter is high PSA (Table 1)

Most of the patient have PSA range over 4-10

ng/ml and average PSA value is 16.86 ng/ml, (Figure 1). When patients were suspected of prostate cancer, All have to be confirmed with tissue diagnosis, which were performed by transrectal ultrasound guidance. There are minority that was diagnosed incidentally by TURP. Methods of diagnosis were shown in Table 2. Most cases who underwent RALRP were low risk and intermediate risk identified by gleason score (Table 3).

Table 1 Clinical presentation of patients

| Symptoms | | Prediagnostic parameter | |
|-------------------|-----|-------------------------|-----|
| Asymptomatic | 145 | High PSA | 224 |
| LUTS | 199 | Abnormal DRE | 19 |
| Hematuria | 6 | High PSA + Abnormal DRE | 98 |
| Urinary retention | 4 | Tissue from TURP | 16 |
| Other | 3 | | |

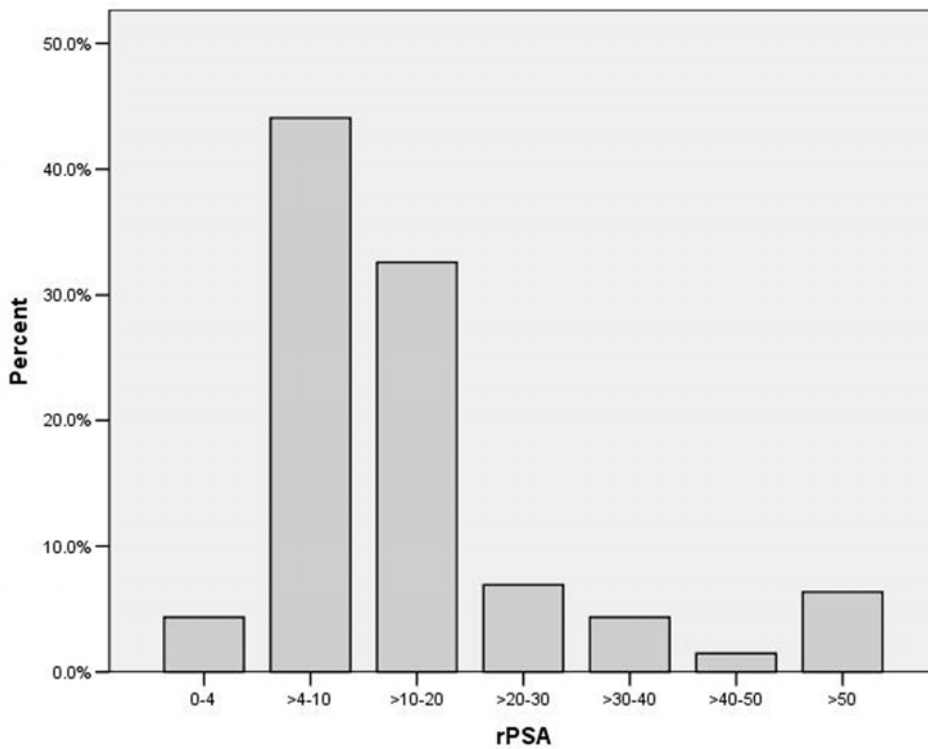


Fig. 1 Number of patients according to preoperation PSA value.

Table 2 *Methods of diagnosis for prostate cancer*

| Tissue diagnosis | |
|------------------|-----|
| TRUS Bx | 291 |
| TURP | 16 |

Table 3 *Pre-operative Gleason score*

| Preoperative Gleason score | |
|-------------------------------------|--------------|
| Low risk (Gleason score <7) | 148 (41.45%) |
| Intermediate risk (Gleason score 7) | 153 (42.8%) |
| High risk (Gleason score 8-10) | 6 (15.9%) |

From operative data, the average operative time is 209.69 minutes (ranged from 90-720 minutes) and has been improving with learning curve. The estimate blood loss is one of benefits in minimal invasive surgery and in this series, the mean estimate blood loss is 472.24 cc and only 27 patients (7.56%) had blood transfusion. (Table 4)

Table 4 *Operative time and blood loss*

| | Mean | Median | Range |
|----------------------|--------|--------|-----------|
| Operative time (min) | 209.56 | 190 | 90-720 |
| EBL* (cc.) | 472.54 | 100 | 200-2,600 |

From post operative data as shown in Figure 2, The median time of drainage tube is 4 days. (mean 4.15 days, range 3-17)

Median time of catheter indwelling was 8 day (mean 10.02 days, range = 3-93). which was shown in Figure 3.

Average length of hospital stay (LOH) is 9.19 and median is 9 days (range = 3-40). (Figure 4)

Perioperative complications occurred in 58 patients (16.24%) which included wound infection, urine leakage, bleeding, pulmonary embolism, UTI and rectal injury. (Table 5) However, there is no serious complication and perioperative mortality in the series.

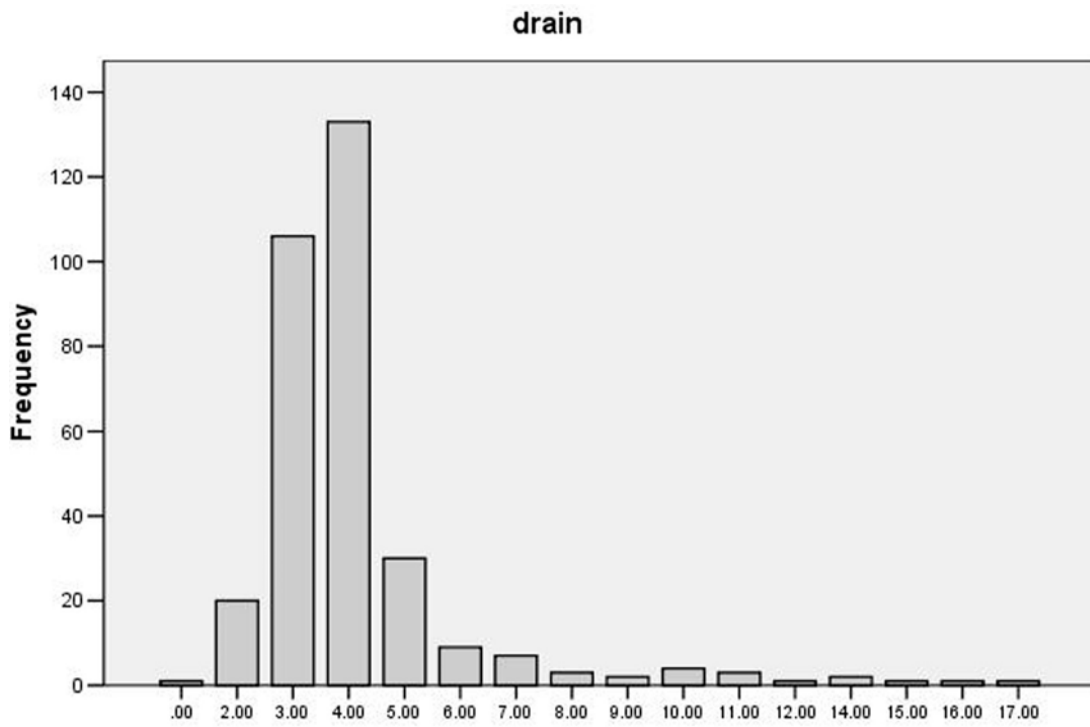


Fig. 2 *Drainage tube time (days)*

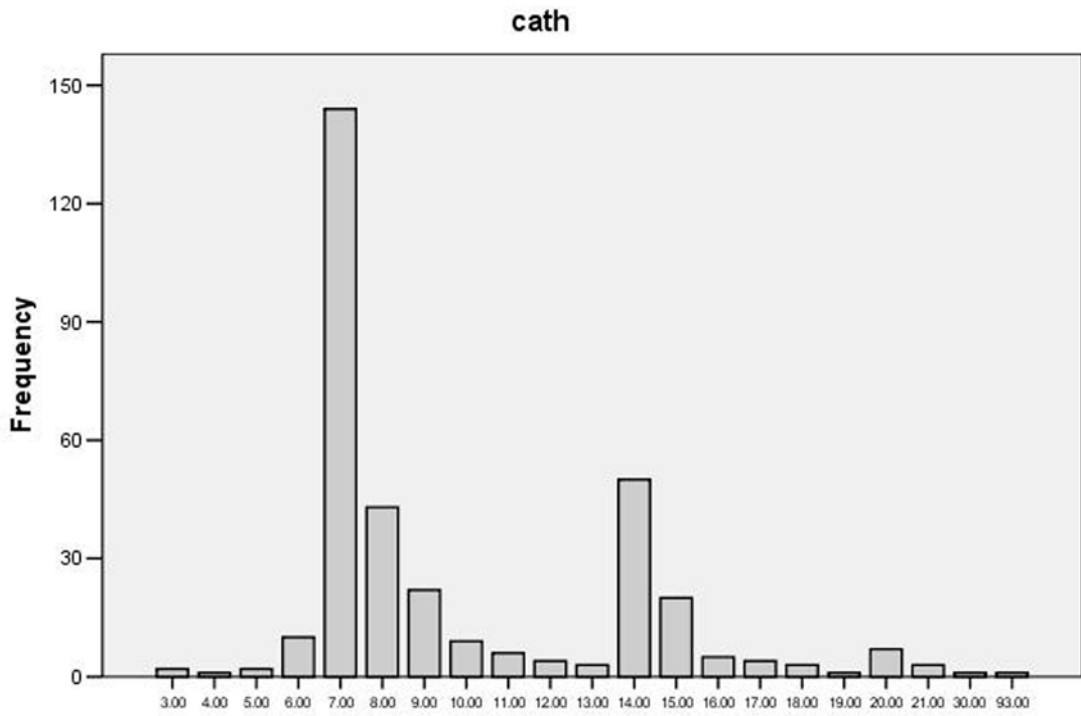


Fig. 3 Catheter indwelling time (days)

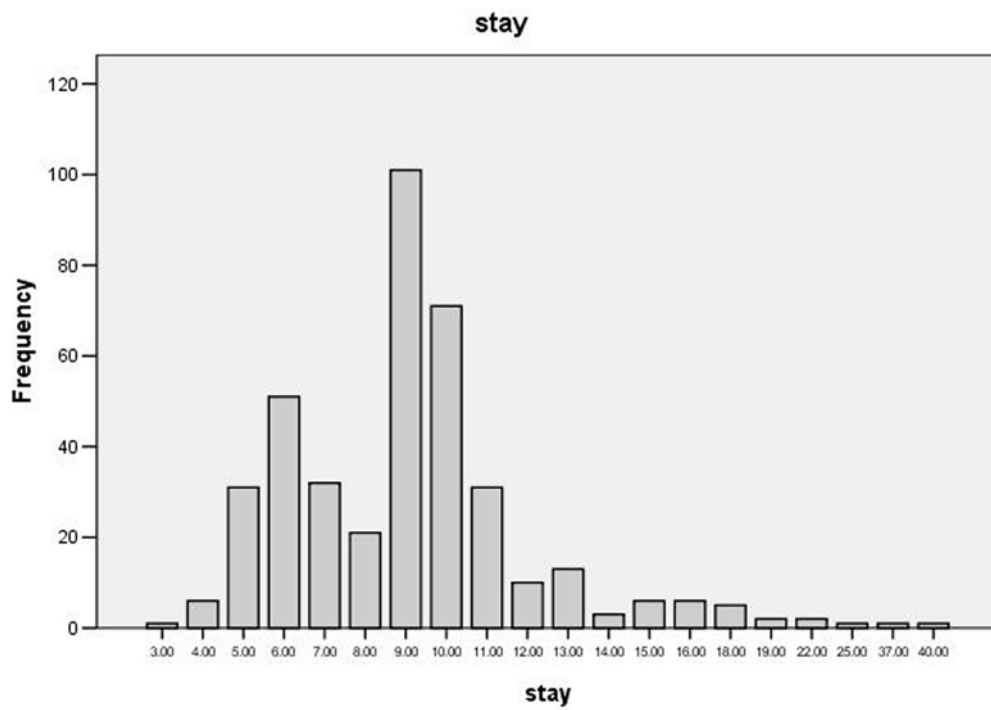


Fig. 4 Length of hospital stay

For pathologic outcome, The average prostate tissue weight is 43.5 gram and most pathologic stage is T2. The overall positive margin rate is 38.34% which are 18% in T2 and 66% in T3 and T4. (Table 6)

Discussion

Cancer of the prostate is now recognized as one of the most important medical problems facing the male population[4]. In America, prostate cancer is the most cancer in men and increased incidence from PSA screening. In Thailand, The estimated incidence rate of prostate cancer in Thailand about 4.9 per one hundred thousand persons.

Radical Prostatectomy is on appropriate therapy for any patient whose tumor is clinically confined to the prostate.[10] However, because of potential perioperative morbidity such as blood loss, blood

transfusions, length of hospital stay[9], minimal invasive surgery is one of the options that patient prefer. RALRP is a relatively recent invention. Since the first report of Robotic assist laparoscopic prostatectomy in 1999, robotic surgery has been increasing mainstream in united state and abroad for the treatment of prostate cancer. From these initial pioneering experiences there have been many published series. RALRP is shown shorter length of stay, less need of blood transfusion, and fewer surgical complication when compared with open surgery.

In Thailand, robotic assisted laparoscopic radical prostatectomy was firstly reported in February 2007 at Siriraj hospital. Since Feb 2007 to July 2009, the total of 357 patients with localized and locally advanced prostate cancer underwent RALRP in Siriraj hospital. An average age is 66.89 years old (range = 40-86). Most of clinical presentations are LUTS with high PSA. Most of the patient who were diagnosed with prostate cancer have PSA more than 10 nano-gram per milliliter with the average PSA value is 16.86 ng/ml (range = 1.83-250). Most of tissue diagnosis were done by transrectal ultrasound prostate biopsy. Most case who underwent RALRP were in low and intermediate risk groups.

The average operative time is 209.69 minutes, ranged from 90-720 minutes and has tended to improve with learning curve. Less blood loss is one of benefits in minimal invasive surgery and, in this series the mean estimate blood loss is 472.24 cc and only 7 percent had blood transfusion. However, it is difficult to estimate blood loss during radical prostatectomy because the urine and blood are mixed in the suctioned fluid. The median time of tube drainage is only 4 days. Drain will be removed when the content is less than 100 milliliter per day. The median time to catheter indwelling time was 8 days. In our initial results, the catheter was removed on the 8th day after cystography was performed to show

Table 5 Perioperative complications

Early complication : 58 of 357 case (16.24%)

| | |
|--|----|
| • Prolonged drainage (≥ 14 days) | 19 |
| • Anastomosis leakage | 13 |
| • Wound infection | 11 |
| • Bleeding | 8 |
| • Bowel Ileus | 4 |
| • Fluid collection | 1 |
| • Pulmonary embolism | 1 |
| • UTI | 1 |

Table 6 Pathologic outcome

Pathological outcome

Prostate tissue weight average = 43.5 g

T1 = 62 (17.39%)

T2 = 217 (60.86%)

T3 = 70 (19.56%)

T4 = 8 (2.2%)

Overall positive surgical margin rate : 38.34%

- Stage T2 : 18.20%

- Stage T3+T4 : 66%

no leakage from the anastomosis. Mean and median of hospital stay is 9.19 and 9 days. Respectively. This seemed to be longer than series from US and Europe because most of Thai patients prefer to leave the hospital without catheters. One of the most important objective benefit of RALRP is reduction in surgical complication and death. From the data it was shown that the perioperative complications occurred in 58 patients (16.24%) The common complication is prolonged tube drainage and anastomotic leakage, however, there was no serious complication and perioperative mortality in this series. The pathological outcome in this study, the overall positive margin rate was 38% but when analyzed, pathological stage T2 positive margin is 18 percent and T3 and T4 positive margin is 66 percent. the comparative pathological staging, most case is pathological stage T2 by TNM classification 2010. While positive margin rate give some insight into oncological efficacy, long-term survival data are needed to definitively confirm

the efficacy of RALRP

Conclusion

In recent years, the surgical technique of radical prostatectomy and understanding of the surgical anatomy of the prostate has dramatically improved. From reviewed early result data of the robotic assisted laparoscopic radical prostatectomy in Siriraj hospital, RALRP is safe and feasible option for treating localized and locally advanced prostate cancer. RALRP allow the patient the benefits of minimal invasive surgery. The initial results are encouraging in term of low morbidity and no serious complication. And this data provides information for decision making for Thai men with clinically localized prostate cancer. However, The cancer control needs to be improved and future studies in larger numbers of patients and long term follow up are needed to assess data of long term postoperative outcomes as continence and potency.

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