Introduction
Uterine myomas are common benign tumors of women in reproductive age. It is estimated that 20-30% of women have a myoma (1). Size and location of the myomas determine the symptomatology. Symptoms fall into the following categories: pressure symptoms (pain, urinary frequency, constipation), abnormal uterine bleeding and/or reproductive dysfunction (infertility, early pregnancy loss, preterm birth). Hysterectomy is the classical treatment and definite cure for myomas.

Hormone therapy aims at reducing symptoms and/or size of the myomas and may be used as a long term treatment or as an adjuvant prior to surgery. Long term treatment may be indicated in patients with absolute contraindication to surgery or until menopause takes place. Presurgery uterine and fibroid volume reduction facilitates both hysterectomy and myomectomy procedures (2-5). Gonadotropin releasing hormone (Gnrh) agonists are increasingly being used for this purpose.

we carried out this study to evaluate :a) changes in uterine and fibroid volume after treatment with GnRH agonists in women with symptomatic fibroids b) the blood flow pattern in uterine vessels before and after treatment with GnRH agonists, c) improvement in symptoms after treatment.

Material and Methods
In this prospective study, nine patients with symptomatic fibroids were enrolled over a period of one year, after informed consent. The patients were expected to buy the medication. Women with pregnancy or lactation, sex hormone therapy within last 2 months and with any concurrent illness that would contraindicate GnRH agonist therapy were excluded from the study.

Each patient had to undergo a general physical and pelvic examination followed by Papanicolaou smear and endometrial aspiration to rule out any other pathology. A
detailed history was recorded for each patient indicating the frequency and severity of vaginal bleeding, pelvic pain and pressure symptoms. The women were examined by both transabdominal (TA) and transvaginal (TV) ultrasound. TA ultrasound is more useful in measuring uterine size in women with large uterus. TV ultrasound was performed in lithotomy position. All women underwent Doppler examination. The ultrasound machine used was Sonoline Versa (Siemens, Germany) A 3.5 mhz probe was used for TA scanning and a 6mhz probe for TV scanning. The anteroposterior diameter (R₃) was measured from a transverse sonogram through the widest part of the uterus and uterine volume calculated using the formula \( \frac{4}{3}\pi R_1 R_2 R_3 / 6 \). The number and size of each myoma was recorded and volume calculated using the same formula, in case of more than one fibroid, mean volume was calculated. The uterine arteries were visualised lateral to the cervix at the level of the internal os with the color doppler technique and blood flow velocity wave forms were obtained by placing the doppler gate over the coloured area and activating the pulsed doppler function. The higher achievable doppler measurements were taken. The resistance index was calculated as A-B/A, where A is peak systolic flow and B is peak diastolic flow. Treatment was started on day 2 of menstrual cycle. Patients received GnRH agonist (decapeptyl 3.75 mg) subcutaneously every 4 weeks for 3 doses. Patients were followed every 2 weeks for the treatment duration. During treatment each patient underwent monthly pelvic examination by the same physician and repeat sonography to determine uterine and fibroid volume and blood flow in uterine vessels. They were asked regarding symptomatic response and side effects. At the end of the study results were analysed as follows:

1. Improvements in symptoms
2. Change in uterine volume before and after 3 months of treatment with GnRH agonists.

4. Change in blood flow pattern in uterine vessels before and after using resistance indices. Signals were recorded. (mean values of three consecutives)

Results

A total of 9 patients were recruited in this study over one year period. The age of the patients ranged from 24-49 years. All patients expect one were married and had completed their family. The main presenting symptoms in all patients was either menorrhagia or polymenorrhagia. One patient had additional symptom of pelvic pain. The duration of symptoms ranged from 6 months to 24 months. All these patients had failed other medical treatment and were not willing for surgery.

Out of 9 patients one dropped out after one cycle of treatment after developing stroke. Out of remaining 8 patients 2 did not respond to GnRH treatment. One patient had increase in uterine volume despite treatment and was counselled for hysterectomy. In the second patient diagnosis of adenomyoma was revised and she was also advised hysterectomy.

Six patients who responded to GnRH were followed up for symptomatic improvement Two women had flare up effect resulting in heavy flow in first cycle after treatment. Two perimenopausal women attained menopause after 3 and 6 injections respectively. One patient expelled a fibroid polyp after 4 injections of GnRH agonist and continued to be eumenorrhoic on follow up. Other 2 patients who responded initially had heavy periods 2-3 months after stopping treatment and were planned for hysterectomy. One patient partly responded but continued to have irregular bleeding on treatment, underwent vaginal hysterectomy and was found to have a submucous fibroid.

The volume of uterus ranged from 102cm³ to 424.7cm³ with a mean of 228.97 cm³ prior to treatment. After 3 months of GnRH therapy the mean uterine volume decreased from 228.90 cm³ to 101 cm³ (55.7%). Using Wilcoxon signed rank test for uterine volume before and after, the p value was 0.0360, not significant. The volume of fibroids ranged from 12.02 cm³ to 89.73cm³ with a mean of 41.37cm³. The mean fibroid volume decreased
from 41.37 to 12.66 cm (64.7%). Using Wilcoxon signed rank test for fibroid volume before and after treatment the p value was .059 (minimally significant). The mean resistance index increased from 0.815 to 0.97, with the p value of 0.0578 (minimally significant).

**Discussion**

Hysterectomy is the classical and only definite cure for fibroids. Hormone therapy aims at reducing symptoms and/or size of the myomas and may be used either as long term treatment or as an adjuvant to surgery. Long term treatment may be indicated in patients with absolute contraindication to surgery or for emotional reasons or until menopause takes place. Presurgery uterine and myoma volume reduction facilitate both hysterectomy and myomectomy.

GnRH agonist treatment is known to reduce the volume of uterus by 35-50%. The reduction in myoma size is reported as a wide range (15-90%) with reduction in blood flow through the uterine vessels after GnRH agonist therapy (6). In our study there was 55.7% reduction in uterine volume and 64.7% reduction in fibroid volume. The reduction in volumes was not statistically significant. There was increase in resistance index after treatment indicating decrease in blood flow in the uterine vessels, but the difference was minimally statistically significant. However, a small sample size could be considered as a draw back of our study. The problem in recruitment was because most of the patients who presented to us had already received medical treatment outside and had completed their family and wanted definite treatment. The other factor was cost of the drug. Although the sample size is small to give definite conclusions, we can say GnRH agonists have a role in treatment of fibroid in perimenopausal women who may achieve menopause thus avoiding surgery. In the present study two perimenopausal women attained menopause after GnRH agonist therapy as reported earlier (7, 8).

Although GnRH agonist therapy cannot replace surgery as treatment of fibroids, but it has a role in certain group of patients, perimenopausal women, unmarried girls and women who want to defer surgery for some reason.

**References**