

## **ABSTRACT:**

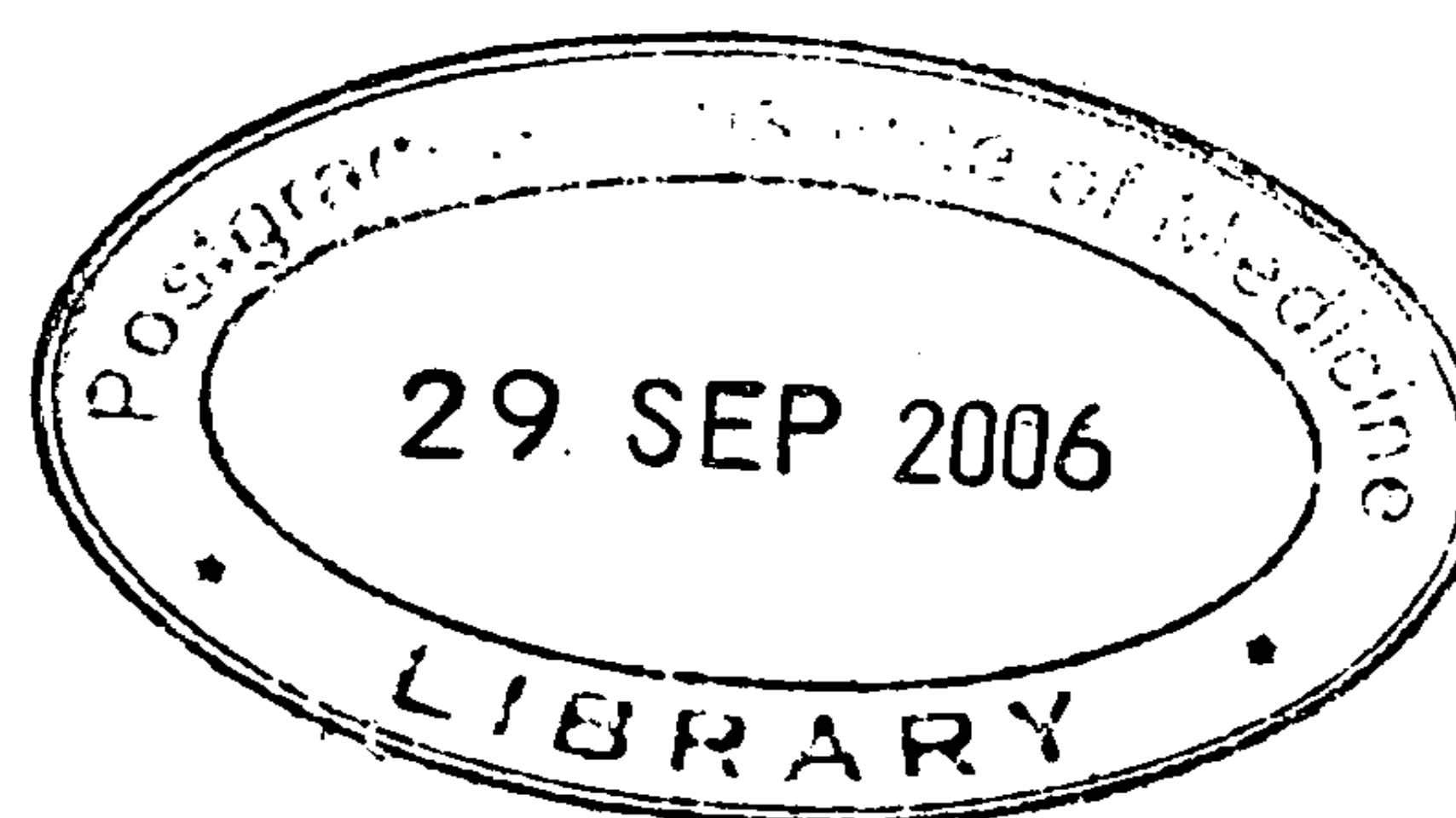
### **Purpose:**

We have performed a randomized trial to compare the gastrointestinal (GI) and genitourinary (GU) toxicity of radiation therapy (RT) for early stage (T1 and T2, N0 M0 on TNM classification) carcinoma of the prostate, using a hypofractionated (55 Gy/20 fractions/4 weeks) versus a conventionally fractionated (64 Gy/32 fractions/6 ½ weeks) dose schedule and also to determine the efficacy of the respective treatment schedules.

### **Methods and Materials:**

The data is based on 217 (108 in the hypofractionated and 109 in the conventionally fractionated dose schedule) patients, median age 69 (range 44-82) years with a median follow-up of 48 (6-108) months. Planning of RT was based on two dimensional (2 D) CT scan data in the majority (156) of the patients, three dimensional (3 D) CT based planning being used in the remaining 61 patients. The same (predominantly 6-23 MV photon 4 field box) technique was used in treatment although in the 3-D patients, multi-leaf collimators were used to shape the planned target volume in each treatment beam. GI and GU toxicity (using patient and physician based symptom questionnaires incorporating elements of the late effects of normal tissues – subjective, objective, management, analytic [LENT-SOMA] classification of late effects and the EORTC sexual function questionnaire) were evaluated before RT and

after its completion at three monthly intervals for the first 2 years and then six monthly for the next 3 years. Efficacy of RT was assessed both clinically (digital rectal examination and radiological imaging) and biochemically (PSA assay) at baseline, and subsequently 3 monthly for 2 years after RT, 6 monthly for the next 3 years and then yearly thereafter.



### **Results:**

RT, whether conventionally fractionated or hypofractionated, resulted in a persistent increase in all but 1 of the six symptom categories used to characterise GI toxicity and in only 1 out of the five symptom categories used to record GU morbidity at 5 years. The total GI and GU symptom scores were also increased at 5 years although 3 of the five GU symptoms (diurnal frequency, hematuria and dysuria) were reduced at this time compared with baseline. There were no differences in total GI and GU symptom scores nor in the impact of these symptoms on daily activities between the patients receiving hypofractionated and conventionally fractionated RT at 5 years. However, 1 month after the hypofractionated treatment, not only were stool frequency and urgency of defecation, mucous discharge and total GI symptom scores worse in this group of patients but also GI symptoms more adversely impacted their daily activities.

~ Multivariate analysis showed that (i) increased total GI and GU symptom scores at 1 month independently predicted for increased GI symptoms at 2, 3, and 4 years and increased GU symptoms at 2, 3, and 5 years, (ii) the hypofractionated dose schedule was of independent prognostic significance for increased GI symptoms at 2 years only and (iii) somewhat surprisingly, 3D RT independently predicted for increase GU symptoms at 2 years.