

# Comparative Study of MRI Staging Vs Figo Staging of Carcinoma Cervix

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## ABSTRACT

**Introduction:** Cervical cancer is the most common genital malignancy among the women in the developing countries. Hence this study was conducted for comparison of FIGO staging with MRI staging for better staging of Carcinoma Cervix, treatment and follow up.

**Material and methods:** This prospective study was carried out in the Dept. of OBGY at MGMH, Petlaburj, Hyderabad from June 2012 to August 2014.

**Results:** During this period total number of 42 patients were chosen for study in whom FIGO staging and MRI staging was correlated, most of them under went surgery for stage IA to stage IIA. The patients in whom there was disparity between FIGO staging and MRI staging, Histopathological staging could be best correlated with MRI staging.

**Conclusion:** Carcinoma cervix is primarily staged clinically as per FIGO guidelines with minimal permissible usage of diagnostic modalities though MRI is not included, it is more accurate in determining tumor location, tumor size, depth of stromal invasion and extension into lower uterine segment.

**Keywords:** MRI Staging, Figo Staging, Carcinoma Cervix

chosen for the study during this period with the following criteria.

## Inclusion criteria:

1. Newly diagnosed, biopsy proven cases of carcinoma cervix.
2. Squamous cell carcinoma, adeno carcinoma adenosquamous or large cell carcinoma on histology.
3. FIGO stage I to IV
4. MRI done with treatment not yet started cases.
5. Written informed consent.
6. Available for follow up.

## Exclusion criteria:

1. Patients with previous medical, surgical and radiation treatment for invasive cancer.
2. Lymphoma, small cell carcinoma and melanoma on histology.
3. Previous hysterectomy
4. Pregnancy
5. Patients not willing for MRI

All the patients thus selected were staged clinically as per FIGO Guidelines. For all these patients MRI scan was done and staging was given as per MRI findings. Then clinical staging is compared with MRI staging. For all the patient in whom FIGO staging and MRI staging was correlated, most of them underwent surgery for stage IA to stage IIA. Of these patients above stage IIB received radiotherapy very few of patients belongs to stage IV received Chemo radiation. Where disparity was found between FIGO staging and MRI staging treatment was planned as per MRI staging like above. The patient who went surgery the operative staging was compared with FIGO staging and MRI staging. In most of them histo pathological staging correlated with FIGO and MRI staging. But the patients in whom there was a disparity between FIGO staging and MRI staging histo pathological staging could be best correlated with MRI staging.

## STATISTICAL ANALYSIS

Microsoft office 2007 was used for the analysis. Mean and SD were used for the interpretation.

## RESULTS

Total of 42 patients were taken into study, out of which 10

## INTRODUCTION

Cervical Cancer is the second most common malignancy among women in the world. In developing countries it is the most common genital cancer. Carcinoma Cervix 5th most common cancer in the world preceded by cancer of stomach, lung, breast, large bowel. It is one of the most common cancer encountered in clinical practice in India. Seen in younger women with an average patient age of onset is 45years. Life time, risk of Cervical Cancer is 2.4% in India Carcinoma cervix is a clinically staged disease. FIGO staging system is the current standard method followed<sup>2</sup> Lesion volume and nodal metastasis two significant prognostic factors are not assessed in FIGO staging The staging of carcinoma cervix can also be done by using imaging modalities like CT and MRI.<sup>3,4</sup> The MRI staging is more accurate in determining tumor location, tumor size, depth of invasion and extension into lower uterine segment.<sup>5,6</sup> This study was done to compare MRI staging of carcinoma cervix with FIGO staging for treatment and follow up. Aim and objectives were to make a comparative evaluation of MRI staging of carcinoma cervix with FIGO staging for treatment and follow up.

## MATERIAL AND METHODS

This study was carried out in the Department of Obstetrics and Gynecology at Modern Government Maternity Hospital, Petlaburj, Hyderabad for the period from June 2012-August 2014 after taking written consent from the patients and clearance from hospital ethical committee. Total No of 42 patients were

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patients were belong to the age group of 40-60 years and above, this age group susceptible to carcinoma cervix with greater incidence. Multi parity is a risk factor for carcinoma cervix with total number of 40 cases out of 42 cases. Prolong duration of marriage, women who was sexually active more prone for infections, and thereby changes in transformation zone, preceding changes leading to carcinoma cervix.

According to FIGO staging of carcinoma cervix 7.1% patients were in stage IA, 40.5% in stage IB, 21.4% in stage IIA, 16.7% in stage IIB, 4.8% in stage III, and 9.5% in stage IV (Table-1). Out of 42 patients 24 were treated with surgery with stage IA to Stage II A. 14 patients with Stage II B and III were treated with

Sr.No	Stages	No. of patients	%
1	1A	3	7.1
2	1B	17	40.5
3	2A	9	21.4
4	2B	7	16.7
5	3	2	4.8
6	4	4	9.5
Total	42	100	0

**Table-1: FIGO**

Sr. No	Stages	No. of patients	%
1	1A	7	16.7
2	1B	6	14.3
3	2A	13	31.0
4	2B	5	11.9
5	3	6	14.3
6	4	5	11.9
Total	42	100	0

**Table-2: MRI Staging**

Sr. No	Treatment	No. of Patients	%
1	Surgery	24	57.1
2	Radiation	14	33.3
3	Chemo radiation	4	9.5
	Total	42	100

**Table-3: Treatment**

FIGO		MRI			Total
		Lower Staging	Correlated	Higher staging	
Stage I A	No. of P	-	2	1	3
	%	-	4.8%	2.4%	7.1%
Stage I B	Count	2	9	6	17
	%	4.8%	21.4%	14.3%	40.5%
Stage II A	Count	1	5	3	9
	%	2.4%	11.9%	7.1%	21.4%
Stage II B	Count	1	4	2	7
	%	2.4%	9.5%	4.8%	16.7%
Stage III	Count	-	2	-	2
	%	-	4.8%	-	4.8%
Stage IV	Count	-	4	-	4
	%	-	9.5%	-	9.5%
Total	Count	4	26	12	42
	%	9.6%	62.0%	28.6%	100.0%

**Table-4: Correlation FIGO staging with MRI**

radiation. 4 patient were given Chemo radiation (Table-2,3). In the present study FIGO staging correlated well with MRI staging in 62% and disparity was found in 38% of the cases. Out of 38% MRI showed higher staging 28.6%, lower staging in 9.6% of the cases (Table-4).

## DISCUSSION

In the present study staging of carcinoma cervix is done with FIGO staging 7 and MRI staging<sup>8,9</sup> with biopsy proven cases and primary treatment given with surgery, radiotherapy, and chemo radiation 24 cases were treated with surgery, 14 cases were treated with radiotherapy and 4 cases were treated with chemo radiation. From the results of this study it is evident that MRI is useful for determining accurate staging of carcinoma cervix. Though results showed MRI is useful for determining extent of disease, 62% correlated with FIGO staging which is usually done for primary treatment and follow up.

Hedvig Hrick et al in their study compare MRI and CT with each and to international Federation of Gynecology and Obstetrics (FIGO) Clinical staging in 172 patients in the pretreatment evolution of early invasive cervical cancer,<sup>10</sup> using surgicopathologic<sup>11</sup> findings on the reference standard, they observed that FIGO clinical staging was influenced by CT and MRI. K.Narayan et al were to determine the relationship between FIGO stage and various tumor parameters determined by magnetic resonance imaging (MRI) and these parameters were predictors of lymph node metastasis as determined by FDG PET<sup>12</sup> in cervical cancer patients and concluded that MRI provides non invasive tumor size and can also demonstrate invasion<sup>13</sup> of the uterine body with increase risk of nodal metastasis.<sup>14,15</sup> This may provide clinically important prognostic information not available from current FIGO staging. The higher staging with MRI can modify treatment options from surgery to radiotherapy.<sup>16</sup>

The most important issue in staging of cervical cancer is to distinguish early disease that can be treated with surgery from advanced disease that must be treated with radiation alone or combined with chemotherapy. MRI is the best single imaging investigation that can accurately determine tumor location, tumor size, depth of stromal invasion, and extension into the lower uterine segment. MRI is accurate for evolution of tumor

size usually with 0.5 cms of the surgical size in 90% cases. An important pitfall of MRI staging is over estimation of parametrial invasion on T2 weighted images in large tumors with accuracy of 70% compared with small ones accuracy of 96% due to stromal edema caused by tumor compression or inflammation. This may lead to higher rate of false positive assessment of parametrial invasion in patients with large tumors, which must be considered when making the treatment decisions in these patients.

Giuliano Rigon et al<sup>17</sup> concluded that MRI use is encouraged for cervical cancer staging. There is good correlation between histological and MRI tumor bulk. MRI has been proposed as a substitute for invasive cystoscopy and proctoscopy in initial screening of cervical cancer. A Jena, et al in their retrospective study was to determine the correlation between MRI measured tumor volume and para metrial invasion on histology in the evaluation of carcinoma cervix showing full thickness stromal invasion (FTSI) of 159 surgical cases of carcinoma cervix with original MRI images. They concluded that MRI measured tumor volume is associated with low accuracy in the evaluation of parametrial invasion in carcinoma cervix, may not help as an additional diagnostic criterion to predict para metrial invasion pre operatively.<sup>18,19</sup>

## CONCLUSION

Carcinoma cervix is primarily staged clinically as per FIGO guideline with minimal permissible usage of diagnostic modalities. Though MRI is not included as a diagnostic aid in FIGO staging, it has certain advantages in staging and treatment options. MRI is more accurate in determining tumor location, tumor size, depth of stromal invasion and extension into lower uterine segment. Over estimation of parametrial invasion in MRI images may leads to higher false positive assessment of parametrial invasion in patients with large tumors. MRI can modify treatment options and may provide clinically important prognostic information not available from current FIGO staging

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