IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 24, Issue 6 Ser. 2 (June. 2025), PP 60-65
www.iosrjournals.org

The Role Of Adjuvant External Beam Radiotherapy In The Management Of Advanced Prostate Cancer: A Single Institutional Retropective Study In Aba, South Eastern Nigeria.

Ibe U. Ibe
Consultant Urologist
Department Of Surgery
Abia State University Teaching Hospital, Aba
Nigeria

Obinna Chikezie
Medical Officer
Department Of Medical Services,
Ministry Of Health, Umuahia
Nigeria

Abstract
Prostate cancer is the most common cancer among African American's.
It is rarely diagnosed before the age of fifty years and when diagnosed earlier, it is often due to hereditary factors.
The objective of this study was to review the role of adjuvant external beam radiotherapy in the Management of advanced prostate cancers.
This study was a retrospective study spanning Five years from January 2015 to December 2019.
About 144 Histopathologically diagnosed Adenocarcinoma of the prostate were reviewed within this Period.
Out of these 144 cases, 102 (70.8%) presented for treatment and were commenced on Androgen Deprivation therapy after investigative staging and counseling.
Out of the 102 cases that had Androgen Deprivation therapy (ADT), only 60 persons (58.8%) had follow Up External beam radiotherapy (RT) while 42 (41.2%) did not have follow up RT.
Finding showed that those who had ADT alone without follow up RT had shorter time interval before onset of biochemical failure and Castration resistance compared to those who had follow up external Beam radiotherapy.
Findings also showed that the more aggressive the tumor with respect to the Gleason grading, the Shorter the interval before the onset of biochemical failure and castration resistance.
External beam radiotherapy was found to be a very useful adjunct treatment in the management of advanced prostate cancer in Abia increasing the symptom free interval before the onset of castration Resistance.
Keywords: *Advanced prostate cancer, external beam radiotherapy, biochemical failure, castration resistance and Aba, Nigeria*

Date of Submission: 27-05-2025 Date of Acceptance: 07-06-2025

I. Introduction

Prostate cancer is the most common cancer among African American men.
Men of African ancestry have higher incidence, morbidity and mortality.

Due to the poor screening knowledge and practice, most of these cancers present at advanced stage (Mohammed and Mohammed 2011)

Advanced prostate cancer includes any cancer with extra prostatic spread such as:

- Locally advanced disease
- Metastatic prostate cancer
- Castration resistant prostate cancer

Whereas curative radiotherapy is a recommended modality of treatment for organ confined prostate cancers especially when it is high grade.
Similarly, Brachytherapy is a recommended treatment protocol for organ confined disease.
Palliative external beam radiotherapy is useful in advanced prostate cancer with extra prostatic spread.

It is used as
- Part of initial adjuvant treatment of advanced disease 6 months after ADT.
- To improve the symptoms of the disease such as Hematuria, bone pains and obstructive voiding.
- To improve symptom free survival.

In locally advanced and metastatic settings, patients should ideally be managed by Androgen Deprivation therapy for about 6 months before palliative external beam radiotherapy to the prostate.

This interval of 6 months enables metastatic cells to wither or undergo Apoptosis before radiating the prostate. After radiation Therapy, Androgen Deprivation Therapy is continued for another 2 yrs to prevent escaped cells from recovering.

In the castration resistance setting with metastases, extra prostatic cells are better managed with Docetaxel – prednisolone therapy so as to control and localize the disease before application of radiotherapy.

But in a castration resistant setting with localized disease Abiraterone therapy may be preferable before administration of radiotherapy.

There is a place for hypo fractionated radiotherapy giving the opportunity for fewer but larger doses of radiotherapy compared to conventional radiotherapy.

The shorter treatment time improves cost effectiveness, reduces time of exposure and thereby reducing adverse effects and at the same time maintaining good outcome.

II. Methodology

This was a retrospective review of the histo pathologically diagnosed prostate cancers within the study period of 5 yrs between January 2015 to December 2019.
Their case files were withdrawn and relevant information collated from them.

Such relevant information included their personal Data, Histo pathology reports with Gleason grades, Type of ADT giving time of administration of radiotherapy if any and the date of onset Biochemical failure and castration resistance.
These information and data were collated, analyzed and interpreted.

Inclusion Criteria

Men who were diagnosed of prostate cancer and received treatment within the study period were part of the study.

Exclusion Criteria

Men who were diagnosed of prostate cancer within the study period but did not receive any form of treatment were excluded from the study.

III. Results

Table 1- Showing The Age Group Distribution Of The Histopathologically Confirmed Prostate Cancers (ADENOCARCINOMA) N=144

S/NO	Age Group In Years	Number	Percentage
1	40-50yrs	2	1.4%
2	51-60yrs	14	9.7%
3	61-70yrs	49	34.0%
4	71-80yrs	59	40.9%
5	81-90yrs	19	13.2%
6	91-110yrs	1	0.7%
7	Total	144	100%

Fig. 1 Bar Chart

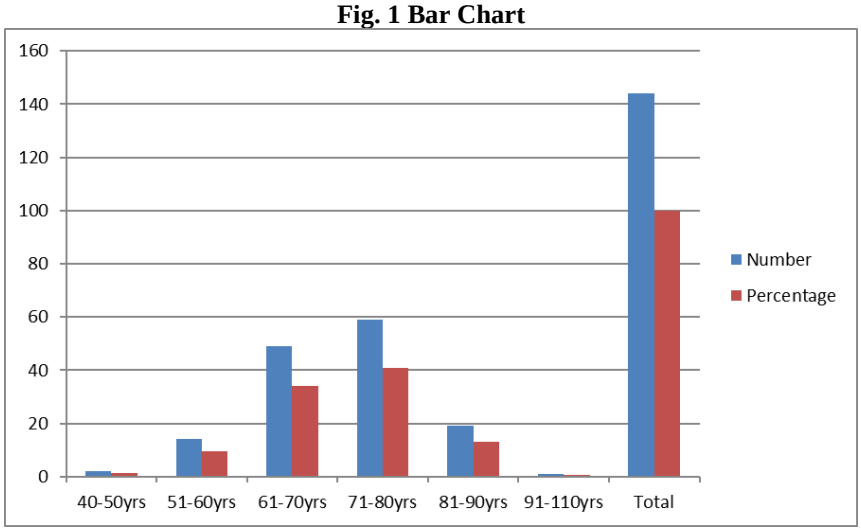

Table 2- Showing The Gleason Grading Groups Of The Histopathologically Confirmed Prostate Cancers N-144

S/NO	Gleason Score And Sun	Grade	Number	Percentage
1	3+3=6/10	Low	11	7.6%
2	3+4=7/10	Intermediate	21	16.7%
3	4+3=7/10	High	19	13.2%
4	4+4=8/10	High	35	24.3%
5	4+5=9/10	High	18	12.5%
6	5+4=9/10	High	24	16.6%
7	5+5=10/10	High	16	11.1%
8	Total		144	100%

Fig. 2 Bar Chart

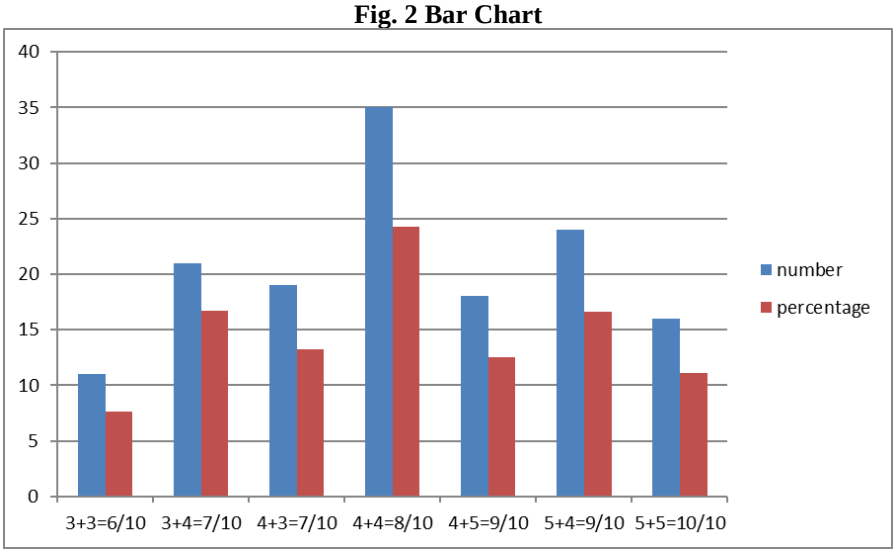

Table 3- Showing The Tumor Grades And Those Who Received Androgen Deprivation Therapy Adt N=102

S/NO	Tumor Grade	ADT	Number	Percentage
1	2+3 Low Grade	ADT	8	7.8%
2	3+4 Intermediate	ADT	11	10.8%
3	4+3 High Grade	ADT	13	12.7%
4	4+4 High Grade	ADT	28	27.5%
5	4+5 High Grade	ADT	12	11.8%
6	5+4 High Grade	ADT	16	15.8%
7	5+5 High Grade	ADT	14	13.7%
8	Total		102	100%

Fig. 3 Bar Chart

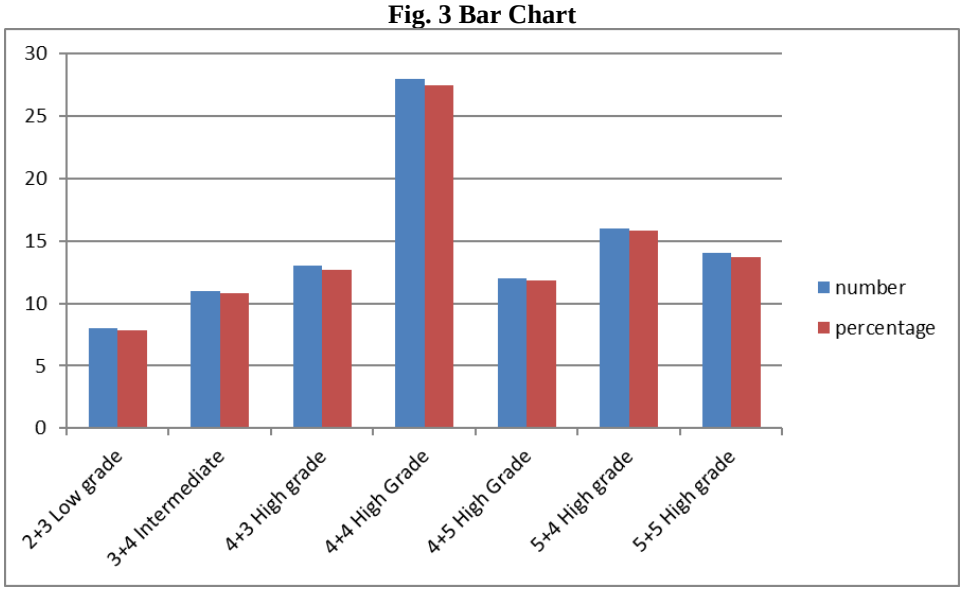

Table 4 Showing The Tumor Grade And Those Who Had Androgen Deprivation Therapy (Adt) With Follow Up Adjuvant External Beam Radiotherapy (Rt)

S/NO	Gleason Grade	Adt	Number	External Beam Rt	Number
1	3+3 Low Grade	Adt	8	Rt Radiotherapy	3
2	3+4 Intermediate	Adt	11	Rt Radiotherapy	6
3	4+3 High Grade	Adt	13	Radiotherapy	7
4	4+4 High Grade	Adt	28	Radiotherapy	18
5	4+5 High Grade	Adt	12	Radiotherapy	7
6	5+4 High Grade	Adt	16	Radiotherapy	9
7	5+5 High Grade	Adt	14	Radiotherapy	10
8	Total		102		60

Table 5 Showing Cases That Had Androgen Had Androgen Deprivation Therapy (Adt) Without Follow Up External Beam Radiotherapy (Rt)

S/NO	Tumor Grade	Adt	Number	Nil External Beam Radiotherapy	Number
1	3+3=/10 High Grade	Adt	8	No Follow Up Radiotherapy	5
2	3+4=7/10 Intermediate	Adt	11	No Follow Up Radiotherapy	5
3	4+3=7/10 High Grade	Adt	13	No Follow Up Radiotherapy	6
4	4+4=8/10 High Grade	Adt	28	No Follow Up Radiotherapy	10
5	4+5 High Grade	Adt	12	Nofollow Up Radiotherapy	5
6	5+5 High Grade	Adt	16	No Follow Up Radiotherapy	7
7	5+5	Adt	14	No Follow Up Radiotherapy	4
	Total		102	No Follow Up Radiotherapy	42

Table 6 Showing Cases Who Received Adt Only And Those With Both Adt Follow Up Radiotherapy

S/No	Gleason Grade	Therapy Recieved	Number	Total
1	3+3=6/10 Low Grade	Adt Only	5	8
2	3+4=9/10 High Grade Intermediate	Adt Only Adt And Rt	6 5	11
3	4+3=7/10 High Grade	Adt Only Adt And Rt	7 6	13
4	4+4 High Grade	Adt Only Adt And Rt	18 10	28
5	4+5 High Grade	Adt Alone Adt And Rt	7 5	12
6	5+5 High Grade	Adt Alone Adt And Rt	10 4	14

Table 7 Showing Average Time Before Onset Of Biochemical Failure And Castration Resistance In Years

S/No	Gleason Grade	Therapy Employed	Average Time Before Resistance
1	3+3=6/10 Low Grade	Adt Alone Adt+Rt	<3yrs Nil
2	3+4=7/10 Intermediate	Adt Alone Adt+Rt	<3yrs Nil
3	4+3=7/10 High Grade	Adt Alone Adt +Rt	<2yrs >8yrs
4	4+4=8/10 High Garde	Adt Alone Adt+Rt	<1 ½ Yrs >8yrs
5	4+5=9/10 High Grade	Adt Alone Adt+Rt	<1 ½ Yrs >7yrs
6	5+4=9/10	Adt Alone Adt+Rt	<1 ½ Yrs >8 Yrs
7	5+5=10/10	Adt Alone Adt+Rt	<1 Yrs >6 Yrs

IV. Discussion

Advanced prostate cancer refers to cancer with extra prostatic extension or one that has undergone castration resistance.

Even though advanced, palliative radiotherapy is an effective tool for management.

Palliative external radiotherapy is used for

- Managing symptoms in advanced prostate cancer particularly bone pains, haematuria, urinary obstruction and rectal complications.
- Extending symptom free survival
- Prolonging the interval before onset of biochemical failure and castration resistance.

In our study, we found the above uses in men who had follow up adjuvant external beam radiotherapy following primary treatment with androgen deprivation therapy.

These patients experienced

- Long symptom free interval
- Delayed onset of biochemical failure and castration resistance
- Extended survival.

Francis Asamoah etal, in Ghana, in their work on contemporary radiation treatment on prostate cancer in Africa- A Ghanian experience, found the biochemical disease free survival rates (bDFS) for low, intermediate and high risk groups were 95%, 70% and 48% respectively.

Both Gleasn score and prostate specific antigen (PSA) were significant predictors for biochemical disease free survival rates.

They concluded that majority of the prostate cancers were locally advanced cancers at the time of presentation for radiotherapy.

bDFS was significantly better for low and intermediate risk diseases than high risk disease.

Rose J. N etal, in their work on the role of radiation therapy in the treatment of the metastatic castration resistant prostate cancer, found out that

- Localized castration resistant prostate cancer can be associated with significant morbidity.
- High dose palliative radiotherapy can be a useful palliative maneuver to obtain local control
- High dose palliative radiotherapy to the prostate is associated with minimal significant toxicity.
- Extended survival is possible in this prostate cancer sub group.

They concluded that high dose palliative radiotherapy was well tolerated and provided high rate of local control in clinically localized castration resistant prostate cancer population.

Although prostate cancer remained the most frequent cause of death, some patients had extended survival without evidence of disease progression.

V. Conclusion

Adjuvant external beam radiotherapy after pre-treatment with androgen deprivation therapy is an important adjunct treatment in Aba.

It was found to delay onset of biochemical failure and castration resistance and generally had extended symptom free survival.

References

[1] Benjamin W Fischer Valuck Etal Palliative Radiation Therapy For Prostate Cancer Patients With Bones Meta Stases At Diagnosis. A Hospital Based Analysis Of Patterns Of Care, RT Fractionation Selence And Overall Survival. Cancer Med 2018 August 17:7 (9) 4240-4250.

[2] Matthew J Boxer Etal Palliative Radiotherapy For Prostate Cancer Oncology (Williamston Park) 2014 April.

[3] Alysa Fairchild Etal Role Of Radiation Therapy And Radiopharmaceuticals In Bone Metastases Curr Opinion Support Palliat Care 2007 October

[4] Marte Gronlie Cameron, Christian Kersten, Ingvili Vistad, Rene Van Helvoirt, Kjetil Weyde, Christine Undseth, Ingvil Mjaaland, Eva Skovlund, Sophie D Fossa, Marianne Gronile Guren. Palliative Pelvic Radiotherapy For Symptomatic Incurable Prostate Cancer. A Prospective Multicenter Study. Radiotherapy And Oncology Volume 115, Issue 3 June 2015, Pages 314 To 320.

[5] R White, R Khor, M Bressec, G Duchesne, S Williams, D Bowden, K Tai, F Foroudi. Efficacy Of High Dose Palliative Radiotherapy For Localized Castration Prostate Cancer Clinical Oncology Vol. 27 Issue 1 January 2015, Pages 16-21

[6] Hiram Agay, Jeff M Michalski Radiation Therapy For Prostate Cancer. Mo Med 2018 April, 115(2) 146-150

[7] Francis A Asamoah Etal Contemporary Radiation Treatment Of Prostate Cancer In Africa. A Ghanaian Experience. J Glob Oncol 2018 July.

[8] Kosi Yamoah, Kwamena Beecham, Sara E. Hegarty, Terry Hyslop, Timothy Schowalter, Joel Yarney. Early Results Of Prostate Cancer Radition Therapy; Analysis With Emphasis On Research Strategies To Improve Treatment Delivery And Outcomes. BMC Cancer 2013 January 16. 13. 23

[9] Kosi Yamoah, Kwamena Beecham, Sara E. Hegarty, Terry Hyslop, Timothy Norman Schowalter, Joel Yarney. Early Results Of Prostate Cancer Radition Therapy At Kor-Bu Teaching Hospital. An Analysis With Emphasis On Research Strategies To Improve Research, Treatment Delivery And Outcomes Among Patients In Ghana. Journal Of Clinical Oncology May 20 2012

[10] Omar S Din Etal Palliative Prostrate Radiotherapy For Symptomatic Advanced Prostate Cancer. Radiother Oncol 2009 November

[11] Hindson B Etal Palliative Radiation Therapy For Localized Prostrate Symptoms In Hormone Refractory Prostate Cancer Australas Radiol 2007 PMID 17958697

[12] Vinay Sharma, Papa Macoumba, Sheriff Abdel Wahab, Ntokozo Ndiovu. Patterns Of Practice Of Palliative Radiotherapy In Africa, Part 1 Bone And Brain Metastases. International Journal Of Radiation Oncology, Biology, Physics Vol.70, Issue 4, 15 March 2008 Pages 1195-1201.

[13] Elizabeth Olatunji Etal Challenges And Opportunities For Implementing Hypo Fractionated Radiotherapy In Africa. Lessons From The Hypo-Africa Clinical Trial E Cancer Medical Science Feb. 2023

[14] Cameron MG Etal Palliative Pelvic Radiotherapy Of Symptomatic Incurable Prostate Cancer- A Systematic Review. Radiother Oncol 2014 PMID 24044801

[15] Carl J Etal Palliative Radiotherapy To Dominant Systematic Lesion In Patients With Hormone Refractory Prostate Cancer. Radiat Oncol 2019 PMID 30630502

[16] Terada N Etal Potential Effectiveness Of Local Radiotherapy For Extending And Reducing Symptomatic Local Events In Patients With De Novo Metastatic Prostate Cancer. BJUI Compass 2020 PMID 35475210

[17] Rose J.N Etal The Role Of Radiation Therapy In The Treatment Of Metastatic Castration Resistant Prostate Cancer. Ther Adv Urol 2015 PMID 26161144

[18] Aya A Sayed, Emad El-Din N Hassan, Sahar N Ahmed, Ali M Ali. Outcome Of Treatment Of Prostate Cancer At Sohag University Hospital Between 2017-2021. Egyptian Journal Of Hospital Medicine. Volume 96 No 1 2024.

[19] Heba Maged Ayoub Etal Biochemical Outcome In Metastatic Prostate Cancer Patients Following Prostate Directed Radiotherapy. E-Cancer Medical Science 2024.