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RESEARCH ARTICLE

"ROLE OF IMAGING IN THE EVALUATION OF PELVIC MASSES IN FEMALE PATIENTS"

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Abstract

Background: Pelvic masses infemales pose a diagnostic challenge due complex origins and overlapping imaging characteristics. Evaluation typically begins with clinical assessment followed by imaging, often incidental during other examinations.

Aims: Accurate diagnosis is crucial for optimal management, with imaging guiding diagnosis and narrowing differentials. This study aims to detail the roles of sonographic and cross-sectional pelvic imaging in females with pelvic pain or masses.

Materials And Methods: Prospective study of 50 female patients with pelvic pain/masses referred for imaging.Initial assessment with ultrasound (US); cases deemed inconclusive or suspicious progressed to CT and MRI. Final diagnoses based on imaging and clinical follow-up.

Results: Identified 50 masses: 38 benign and 12 malignant.

Sensitivity of CT: 80% for benign, 100% for malignant; MRI: 85% for benign, 100% for malignant lesions.

Conclusion: Pelvic tumors and their mimics challenge diagnosis. Ultrasound is initial for pelvic pathology; MRI's superior soft tissue contrast and organ-specific details enhance diagnostic accuracy.

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Introduction:-

Pelvic masses in female patients present a common diagnostic challenge in clinical practice. These masses can arise from various structures within the pelvis, including the uterus, ovaries, fallopian tubes, bladder, bowel, or pelvic bones. The etiology of pelvic masses ranges from benign conditions, such as ovarian cysts and uterine fibroids, to malignant pathologies, including ovarian or uterine cancer. Accurate and timely evaluation is crucial for guiding appropriate clinical management and optimizing patient outcomes.

Imaging plays a pivotal role in the comprehensive assessment of pelvic masses. Advances in imaging modalities have significantly enhanced the ability to differentiate between benign and malignant lesions, define the anatomical extent, and aid in planning further interventions or surgical procedures.

Ultrasound (US), owing to its widespread availability and non-invasive nature, often serves as the first-line imaging modality, providing valuable initial insights into the nature of pelvic masses. Magnetic Resonance Imaging (MRI) offers superior soft tissue characterization, especially when ultrasound findings are inconclusive, and is indispensable in the preoperative assessment of complex cases. Computed Tomography (CT)while less frequently employed for primary diagnosis, is critical in staging malignancies and evaluating for metastatic disease.

Aimsand Objectives:-

To determine the efficiency of diagnosticimaging modalities like Ultrasonography, Computed tomography, Magnetic Resonance Imaging and to narrow down the differential diagnosis in patients presentingwithcomplaintsofpain/massinthefemalepelvisandthus provide the necessary information aiding in the appropriate management ofthe patients.

Research Methodology:

Source of Data:

PatientsarereferredtotheRadiologydepartmentandare subjected to ultrasonography.Of all the patients who undergo an ultrasound examination and which are considered sonographicallyinconclusiveor possibly malignant conditions, are furtherinvestigated with the help of CT and MRI.

Type of Study:

Thisstudywasaprospectivecross-sectionalstudy.

Place of study:

ThestudywascarriedoutintheDepartmentofRadiology,BASAWESHWARTEACHINGANDGENERALHOSPITAL, KALABURAGI.
TIMEOFSTUDY:NOVEMBER2022toOCTOBER2023
SAMPLESIZE:Thesamplesizeis50femalepatients.

ResearchMethodology:-

Sampling Criteria:

Inclusion Criteria:

1. Femalepatientspresentingwithpain/massinthelowerabdomen.
2. Female patients with their ages five years and above.
3. Informedconsentistakenfromthepatientsbeforethestudy.

Exclusion Criteria:

1. Childrenbelow5 years
2. FemalepatientswithUrinarybladderandbowelmassesareexcluded.
3. Femalepatientswithahistoryofhypersensitivitytocontrastagents.
4. Femalepatientswithexistingrenaldisease.

Research Methodology:-

Patientpreparation:

Informedandwrittenconsentwastakenfromall patients before they get enrolled in our study.

Equipment:

Sonographytechniqueandanalysis:

TransabdominalandTransvaginal sonography is performed using GE LOGIQ P9

CTScantechnique And Analysis:

CTscanperformedusingaCT[PHILIPS 16 slice CT] machine

MRIIMAGINGTECHNIQUEANDANALYSIS:MRimagingexaminationusing 1.5T[1.5TPHILIPSACHIEVA]machine

ObservationandResults:-

Table1:-Benign&Malignantlesions.

LESIONS	No.
BENIGN LESIONS	38
MALIGNANT LESIONS	12

Table2:-Finaldiagnosis.

Final Diagnoses	No.of Lesions
BENIGN LESIONS (n = 38)	
Peritoneal inclusion cyst	1
Serous cystadenoma	4
Mucinous cystadenoma	4
Endometriotic cyst	3
Hemorrhagic Cyst	5
Dermoid Cyst	3
Ovarian Torsion	1
Fibroid	7
Adenomyosis	2
Imperforate Hymen with Hematocolpus	1
Endometrial Polyp	1
Hydatidiform Mole	1
Tubal Ectopic Pregnancy	1
TOA	3
Bartholin Cyst	1
MALIGNANT LESIONS (n = 12)	
Serous cystadenocarcinoma	2
Mucinous cystadenocarcinoma	2
Immature Teratoma	1

Observation and Results:-

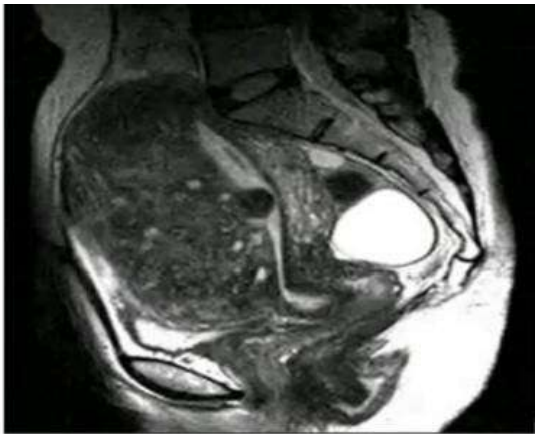
Table3:-Organoforigin.

ORIGIN	NO.OF LESIONS	% OF LESIONS
Adnexal	31	62%
Uterine	13	26%
Cervix	5	10%
Vagina	1	2%

Table4:-%Oforigindetectionby Modalities.

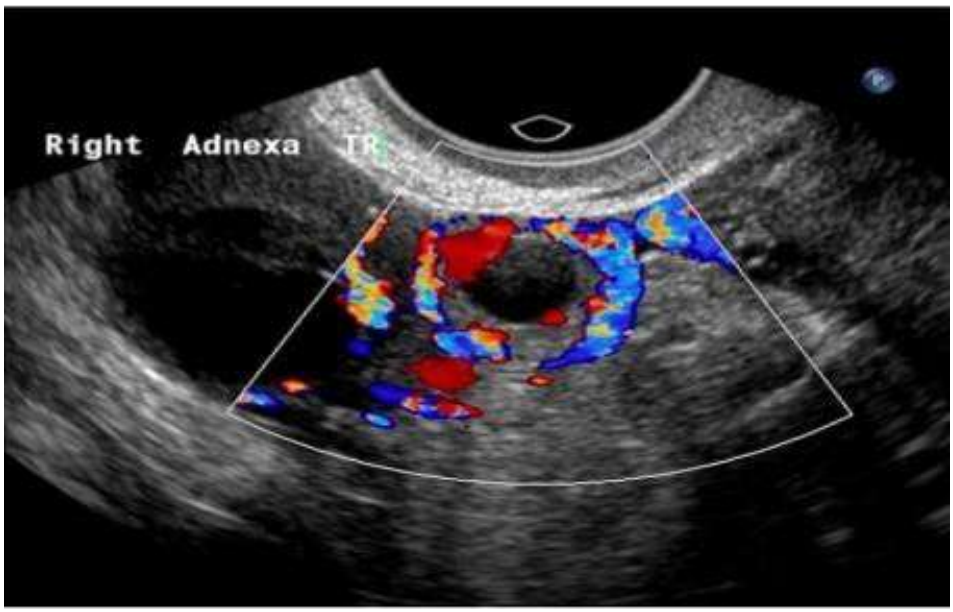
ORIGIN OF LESION	NO.OF LESIONS	% OF LESIONS
Sonography(n=50)	25	50%
CT Scan(n=12)	11	91.66%
MRI(n=13)	12	92.30%

Case1-Uterineadenomyosis



A45YROLDFEMALEWITHMENORRHAGIAANDPELVICPAINSINCE6MONTHS
USG:ENLARGED,GLOBULARUTERUSWITHDIFFUSEECHOGENICNODULESANDSUB-ENDOMETRIALCYSTS
MRI:BULKYUTERUSWITHJUNCTIONALZONETHICKNESSWITHHYPERINTENSEFOCIANDDILATEDCYSTICGLANDS

Case2-Ectopicpregnancy

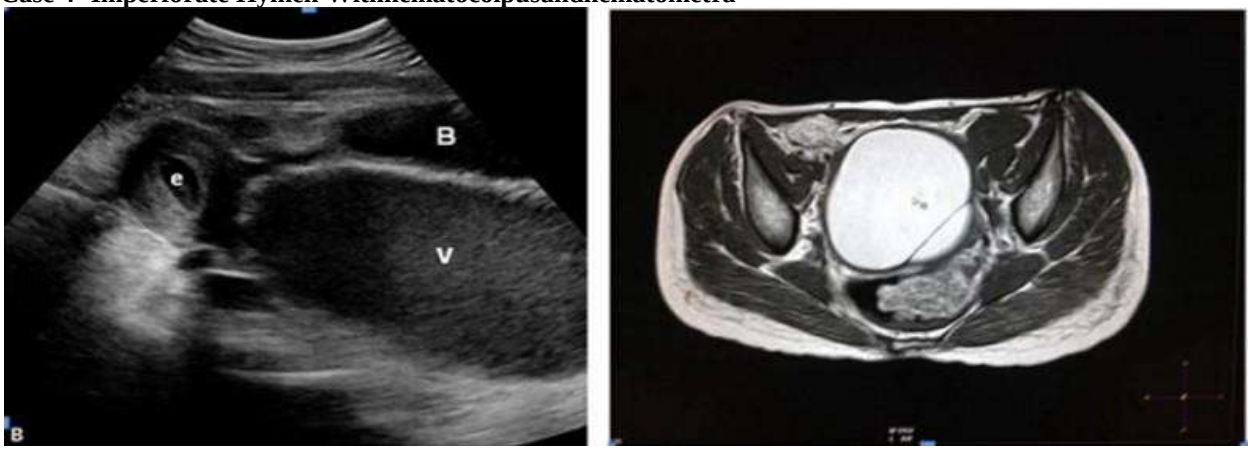


•A 25YR OLD FEMALE WITH 2MONTHS OF AMENORRHEA, UPT POISITIVE AND ACUTE PAIN ABDOMEN
USG:EMPTYENDOMETRIALCAVITYANDRINGOFFIREAPPEARNCEOFRIGHTADNEXA,CONFIRMEDECTOPIC PREGNANCY ON SUGERY.

Case3-Paraovariancystwithtorsion

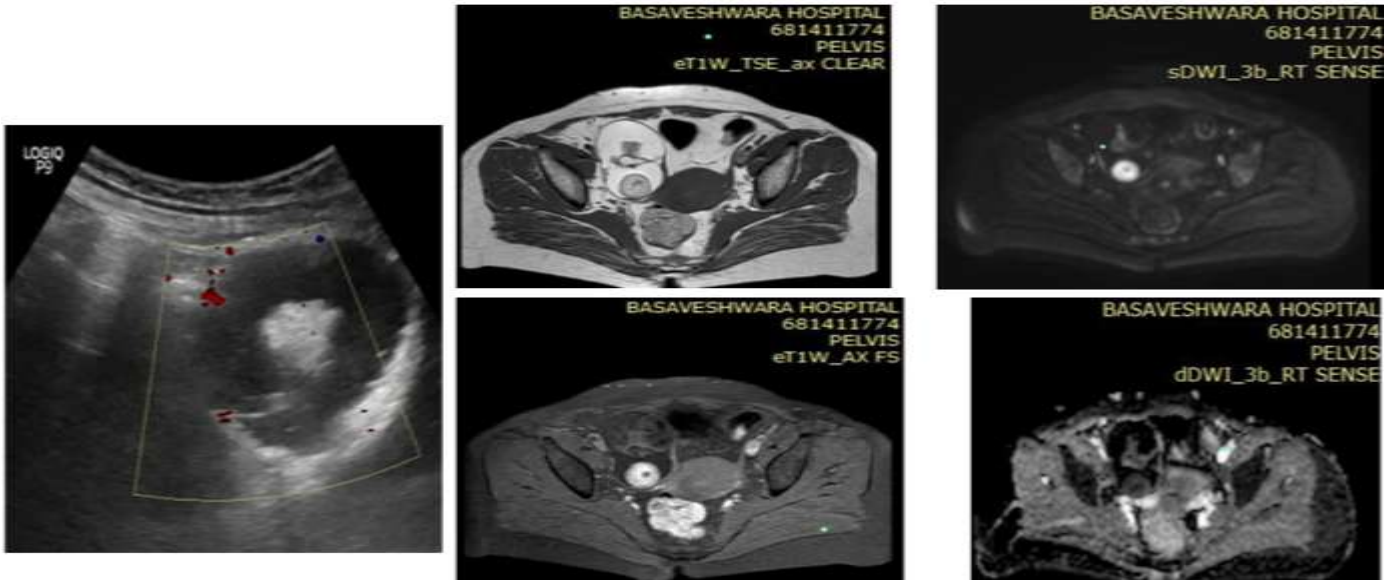
A22YROLDFEMALEWITHACUTELOWERABDOMINALPAIN
USG:ANECHOICCYSTICLESIONINTHEMIDLINEWITHAVASCULARSOLIDCOMPONENT,SEPARATEFROMOVARY
ONMRI:T2-CYSTICLESIONWITHINTERNALDEBRISSEPARATEFROMOVARY DWI&ADC- PATCHY AREAS OF DR INDICATING HEMORRAHGE

Case 4- Imperforate Hymen Withhematocolpusandhematometra



A14YROLDFEMALEWITHPAINABDOMENANDNOTATTAINEDMENARCHE
USG-
GROSSLYDILATEDHYPOECHOICVAGINALCAVITYWITHLOWLEVELINTERNALECHOESCONSISTENT WITH HEMATOCOLPUS AND HEMATOMETRA
MRI-T1-
DILATEDHYPERINTENSEAREINCONTINUITYWITHUTERINECAVITY,SUGGESTIVEOFFLUIDINVAGIN ALCAVITY –CONSISTENTWITHHEMATOCOLPUS

Case5-Ovariandermoidcyst

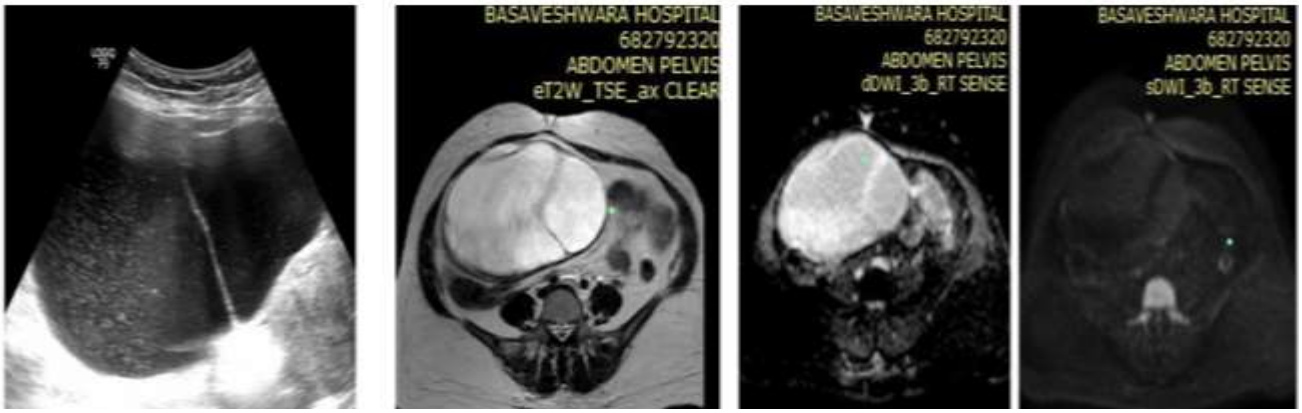


A40YROLDFEMALEWITHINCIDENTALLYDETECTEDADNEXALLESION
ULTRASOUND:WELLDEFINEDCYSTICLESIONINRIGHTADNEXAWITHHYPERECHOICSOLIDCOMPON ENTSNOTTAKING VASCULARITY ON COLOR DOPPLER
MRI:T1&T1FS-T1HYPERINTENSEAREASUPRESSINGONFATSATURATEDSEQUENCE
DWI&ADC:SOLIDCOMPONENTSHOWINGDRREPRESENTINGROKITANSKYNODULE

Case6–Cervicalcarcinoma

A52YROLD FEMALEWITHBLEEDINGPVSINCE2MONTHS
USG:ILLDEFINEDHYPOECHOICAREAINLOWERUTERINEANDCERVICALREGION,TAKINGVASCULARITY
MRI:T2-HETERO-INTERMEDIATESIAREA,SHOWINGDR,HETEROGENOUSENHANCEMENTONPOSTCONTRASTSTUDY.

Case7-Ovarianserouscystadenoma



A44YEAROLDFEMALEWITHABDOMINALDISTENSIONANDWEIGHTLOSSSINCE6MONTHS
ULTRASOUND:ANECHOICCYSTICLESIONINPELVICCAVITYWITHFEWTHINSEPTATIONS
MRI:T2&DWI:AXIALIMAGE-HYPERINTENSECYSTICLESIONINRIGHTADNEXAWITHFEWTHINSEPTATIONSSHOWINGNO AREA OF DIFFUSION RESTRICTION

Conclusion:-

Pelvictumoursandtheir mimicsinthefemalepelviscanpresentadiagnosticchallenge.Thestudyhasshownthatultrasoundistheinitialimagingmodality in investigationof female pelvicpathology.MRI is superior to US in all respects due to the excellent soft tissue contrast and organ specific information.

Continued advancements in imaging technology promise to further enhance diagnostic precision and improve patient outcomes in the evaluation of pelvic masses.WesuggestallpatientswithpelvicabnormalityidentifiedonUSorin whom there is strong clinical suspicion of disease should undergo CT/MRI pelvic imaging because of better soft tissue resolution and multi planar capability resulting in higher accuracy rates.

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