



2025

KARNATAKA RADIOLOGY EDUCATION PROGRAM

CLINICAL RESEARCH – BRIDGING IMAGING & INNOVATION

SESSION – 9 – MANUSCRIPT WRITING - I



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STRUCTURE OF SCIENTIFIC MANUSCRIPT

INTRODUCTION

- ✓ ESSENTIAL COMPONENTS OF MANSUCRIPT WRITING SHOULD BE:
 - ✓ WELL-ORGANIZED
 - ✓ CLEAR
 - ✓ SHOULD ANSWER THE RESEARCH QUESTION
- ✓ GUIDELINES ARE IN PLACE TO DRAFT THE RESEARCH MANUSCRIPT
- ✓ POORLY STRUCTURED MANUSCRIPT MAY LEAD TO REPEATED SUBMISSIONS/ REJECTION



STRUCTURE OF SCIENTIFIC MANUSCRIPT

- ✓ 1. TITLE
- ✓ 2. ABSTARCT
- ✓ 3. INTRODUCTION
- ✓ 4. MATERIALS & METHODS
- ✓ 5. RESULTS
- ✓ 6. DISCUSSION
- ✓ 7. REFERENCES

Title/title page
Abstract
Introduction
Methods and materials
Results
Discussion
References

SPECIFIC PURPOSE OF MANUSCRIPT SECTIONS

✓ **INTRODUCTION** - WHY YOU DID? , WHAT YOU DID?

✓ **METHODS** - WHAT YOU DID?

✓ **RESULTS** - WHAT YOU FOUND?

✓ **DISCUSSION** – WHAT IT MEANS?

DRAFTING THE MANUSCRIPT COMPONENTS

1. Title
2. Abstract
3. Introduction
 - 3.1 Relevance: Statement of the issue
 - 3.2 Originality: Need for the study
 - 3.3 Purpose: Hypothesis to be tested
4. Materials and Methods
 - 4.1 Study design and subjects
 - 4.2 Imaging techniques
 - 4.3 Image analyses
 - 4.4 Statistical analyses

SCIENTIFIC MANUSCRIPT – TITLE

PLEASE REFER SESSION 5 (ON RESEARCH ARTICLE TITLE, AND PICOT MODEL)

SCIENTIFIC MANUSCRIPT – ABSTRACT

✓ KEY FUNCTIONS:

- ✓ THE ABSTRACT SERVES AS THE FIRST IMPRESSION FOR EDITORS AND POTENTIAL READERS, INFLUENCING WHETHER THEY PROCEED WITH THE REVIEW PROCESS OR READ THE ARTICLE.

✓ RELEVANCE:

- ✓ CLEARLY ARTICULATE THE RELEVANCE OF THE STUDY IN THE ABSTRACT TO ENGAGE READERS AND EDITORS.

✓ SEARCH ENGINE IMPACT:

- ✓ THE ABSTRACT AND KEYWORDS IMPACT THE MANUSCRIPT'S DISCOVERABILITY THROUGH SEARCH ENGINES.

✓ WORD LIMIT:

- ✓ GENERALLY, THE ABSTRACT IS LIMITED TO 150 TO 250 WORDS.

SCIENTIFIC MANUSCRIPT – ABSTRACT (4 ELEMENTS)

✓ PURPOSE:

- ✓ CLEARLY PRESENT THE PRIMARY AND, IF APPLICABLE, SECONDARY PURPOSE OF THE STUDY IN A SINGLE SENTENCE.

✓ METHODS:

- ✓ BRIEFLY DESCRIBE THE STUDY POPULATION, IMAGING TECHNIQUES, MEASURED VARIABLES, DATA ANALYSES, STATISTICS, AND WHETHER THE STUDY WAS RETROSPECTIVE OR PROSPECTIVE.

✓ RESULTS:

- ✓ STATE ONLY THE MOST IMPORTANT FINDINGS REFLECTING THE STUDY'S PURPOSE, INCLUDING SIGNIFICANCE LEVELS.

✓ CONCLUSION:

- ✓ PROVIDE A CLEAR CONCLUSION ADDRESSING THE STUDY'S PURPOSE AND SUBSTANTIATED BY THE DATA DESCRIBED IN THE RESULTS SECTION OF THE ABSTRACT.

SCIENTIFIC MANUSCRIPT – ABSTRACT

Abstract

Background Ultrasound (US) surveillance for transjugular intrahepatic portosystemic shunt (TIPS) dysfunction has yet to be standardized, as clear-cut criteria have not been conventionally defined. This study evaluated the role of US-based parameters in detecting hemodynamic TIPS dysfunction (HD).

Methods We included consecutive patients treated with TIPS. All patients were scheduled within the first six weeks after the procedure for TIPS revision, comprised of a Doppler US exam and invasive hemodynamic reassessment. Clinical TIPS dysfunction (CD) was defined as symptom recurrence, while HD was defined by a portal pressure gradient (PPG) ≥ 12 mmHg. The predictive capabilities of Doppler US for predicting TIPS dysfunction were tested against the hemodynamic gold standard.

Results 86 patients were included. Secondary prophylaxis of variceal bleeding was the main indication for TIPS in 72 patients (83.7%), while 27 (31.4%) had refractory ascites. HD occurred in 37 cases (43%), of which 25 patients (67.5%) had no CD. Patients with HD had a significantly lower portal vein velocity (PVV): 35 (20–45) cm/s vs. 40.5 (35–50) cm/s, $p=0.02$. Compared to the immediate post-TIPS assessment, the patients without HD had a Δ PVV of 6.08 ± 19.8 cm/s vs. a decrease of -8.2 ± 20.2 cm/s in HD ($p=0.04$). Using a cut-off value of 40.5 cm/s, PVV had an AUROC of 0.705 for predicting HD, while the addition of Δ PVV (cut-off 9.5 cm/s) improved the AUROC to 0.78.

Conclusion Despite adequate symptom control, a considerable percentage of patients have a post-TIPS PPG ≥ 12 mmHg. The dynamic assessment of PVV and its temporal dynamics can reliably predict TIPS dysfunction.

Keywords

shunts - interventional procedures - transjugular intrahepatic porto-systemic shunt - TIPS - Color Doppler ultrasound



SCIENTIFIC MANUSCRIPT – INTRODUCTION

✓ GENERALLY, THE INTRODUCTION IS SUBDIVIDED INTO THREE SECTIONS: RELEVANCE, ORIGINALITY, AND PURPOSE.

✓ **RELEVANCE: STATEMENT OF THE ISSUE:**

- ✓ **IMPORTANCE:** MAKE THE CASE FOR THE IMPORTANCE OF YOUR BROAD RESEARCH TOPIC.
- ✓ **BACKGROUND INFORMATION:** PROVIDE BACKGROUND INFORMATION ABOUT A CERTAIN DISEASE.
- ✓ **RELEVANCE OF IMAGING:** EXPLAIN WHY IMAGING IS RELEVANT TO THE DISEASE.
- ✓ **CLINICAL/TECHNICAL DILEMMA:** PRESENT THE CLINICAL OR TECHNICAL DILEMMA OR UNMET NEED.

✓ **EXAMPLE:** "MAGNETIC RESONANCE IMAGING (MRI) HAS REVOLUTIONIZED THE FIELD OF MEDICAL DIAGNOSTICS, PROVIDING NON-INVASIVE AND HIGHLY DETAILED IMAGES OF INTERNAL STRUCTURES. IN THE CONTEXT OF LIVER DISEASE, EARLY AND ACCURATE DETECTION OF HEPATIC FIBROSIS IS CRUCIAL FOR EFFECTIVE PATIENT MANAGEMENT. DESPITE ADVANCEMENTS, A SIGNIFICANT CLINICAL CHALLENGE REMAINS IN DIFFERENTIATING BETWEEN EARLY-STAGE FIBROSIS AND MORE ADVANCED STAGES. ADDRESSING THIS CHALLENGE CAN POTENTIALLY IMPROVE PATIENT OUTCOMES AND REDUCE HEALTHCARE COSTS."

SCIENTIFIC MANUSCRIPT – INTRODUCTION

✓ **ORIGINALITY: NEED FOR THE STUDY:**

✓ **OVERVIEW OF TECHNIQUES:** PROVIDE AN OVERVIEW OF THE IMAGING TECHNIQUES CURRENTLY USED TO ADDRESS THE CLINICAL CONDITION.

✓ **GAP ANALYSIS:** ARTICULATE THE SHORTCOMINGS OF PREVIOUS STUDIES OR CURRENT TECHNIQUES, PROVIDING THE RATIONALE FOR YOUR STUDY.

✓ **LOGICAL NEXT STEP:** POSITION YOUR STUDY AS THE LOGICAL NEXT STEP TO BUILD UPON PREVIOUS RESEARCH.

✓ **BROADEN SCIENTIFIC HORIZON:** INDICATE HOW YOUR STUDY MAY BROADEN THE SCIENTIFIC HORIZON AND IMPROVE CLINICAL TREATMENT.

✓ **EXAMPLE:** "CURRENT IMAGING TECHNIQUES FOR ASSESSING HEPATIC FIBROSIS, SUCH AS ULTRASOUND AND COMPUTED TOMOGRAPHY (CT), HAVE LIMITATIONS IN SENSITIVITY AND SPECIFICITY. WHILE MRI WITH GADOLINIUM-BASED CONTRAST AGENTS HAS SHOWN PROMISE, IT STILL FACES CHALLENGES IN ACCURATELY STAGING FIBROSIS. PREVIOUS STUDIES HAVE PRIMARILY FOCUSED ON QUALITATIVE ASSESSMENTS, LACKING IN QUANTITATIVE ANALYSIS THAT COULD ENHANCE DIAGNOSTIC ACCURACY. THIS GAP NECESSITATES THE DEVELOPMENT OF NOVEL MRI TECHNIQUES THAT CAN PROVIDE QUANTITATIVE DATA FOR MORE PRECISE EVALUATION OF HEPATIC FIBROSIS."

SCIENTIFIC MANUSCRIPT – INTRODUCTION

✓ **PURPOSE: HYPOTHESIS TO BE TESTED:**

- ✓ **SUMMARIZE RATIONALE:** SUMMARIZE THE RATIONALE FOR THE STUDY FROM THE TWO PREVIOUS SECTIONS.
- ✓ **CLEAR HYPOTHESIS:** CLEARLY PROVIDE THE HYPOTHESIS TO BE TESTED.
- ✓ **RESEARCH QUESTION:** EMPHASIZE THE IMPORTANCE OF HAVING A CLEARLY STATED RESEARCH QUESTION.
- ✓ **PURPOSE IN SINGLE SENTENCE:** STATE THE PURPOSE OF THE STUDY IN A SINGLE SENTENCE, WHICH SHOULD ALIGN WITH THE ABSTRACT.

- ✓ **EXAMPLE:** "THIS STUDY AIMS TO EVALUATE THE EFFICACY OF A NOVEL QUANTITATIVE MRI TECHNIQUE IN DIFFERENTIATING STAGES OF HEPATIC FIBROSIS. WE HYPOTHEZIZE THAT THIS NEW METHOD WILL PROVIDE SUPERIOR SENSITIVITY AND SPECIFICITY COMPARED TO EXISTING IMAGING TECHNIQUES. OUR PRIMARY PURPOSE IS TO VALIDATE THIS TECHNIQUE IN A COHORT OF PATIENTS WITH VARYING STAGES OF HEPATIC FIBROSIS. THE RESULTS OF THIS STUDY COULD PAVE THE WAY FOR IMPROVED DIAGNOSTIC PROTOCOLS AND BETTER PATIENT MANAGEMENT."

QUIZ

WHAT ARE THE FOUR MAJOR ELEMENTS THAT SHOULD BE INCLUDED IN THE ABSTRACT OF A SCIENTIFIC MANUSCRIPT, AND WHY IS IT IMPORTANT TO CLEARLY ARTICULATE THE RELEVANCE OF THE STUDY IN THE ABSTRACT?

- A) TITLE, AUTHORS, METHODS, CONCLUSION
- B) BACKGROUND, METHODS, DISCUSSION, CONCLUSION
- C) PURPOSE, METHODS, RESULTS, CONCLUSION
- D) INTRODUCTION, HYPOTHESES, RESULTS, DISCUSSION

ANSWER

C) PURPOSE, METHODS, RESULTS, CONCLUSION

EXPLANATION: THE ABSTRACT SHOULD INCLUDE THE PURPOSE, METHODS, RESULTS, AND CONCLUSION TO PROVIDE A CONCISE SUMMARY OF THE MANUSCRIPT. CLEARLY ARTICULATING THE RELEVANCE OF THE STUDY IN THE ABSTRACT IS IMPORTANT BECAUSE IT HELPS EDITORS DECIDE WHETHER THE MANUSCRIPT SHOULD PROCEED WITH THE REVIEW PROCESS AND ASSISTS POTENTIAL READERS IN DECIDING WHETHER TO READ THE ARTICLE.

THANK YOU

