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PROSPECTIVE STUDY ON SURGICAL MANAGEMENT OF UNDESCENDED TESTIS IN A TERTIARY HOSPITAL

General Surgery

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KEYWORDS

UDT– Undescended Testis USG– Ultra sonogram TAI- Testicular Atrophic Index TV- Testicular Volume

INTRODUCTION

Undescended testis is one of the most common surgical problems encountered among paediatric age group. Undescended testis, age of diagnosis plays important role in outcome. In clinical examination of groin and scrotum, palpable testis and non-palpable testis can be categorized. Based on palpable or non-palpable patients management course differs. If retractile testis treatment plan altered, however managed conservatively and monitored periodically. Open Orchidopexy is done for palpable testis and laparoscopic surgeries are done for non-palpable testis .Ultrasound imaging plays a role in locating non-palpable testis and assessing testicular volume. Undescended testis, if left untreated can result in malignancy, infertility, psychological problems, testicular trauma, and torsion testis. Early diagnosis and treatment is of paramount importance. Undescended testis associates with other anomalies such as congenital inguinal hernia, hypospadias and sexual disorders.

This study will present a correlation between presentations, management mainly concentrating on surgical management and outcome of undescended testis patients in Government Vellore Medical college.

AIMS AND OBJECTIVES OF STUDY

1. To study the clinical presentation of undescended testis as regards to age, position, side and symptoms.
2. To study the management on undescended testis.
3. To study laparoscopic management of undescended testis, single staged or double staged
4. To study correlation of preoperative ultrasound imaging, testicular atrophic index and intraoperative findings of undescended testis.

Fig 1 Algorithm Of Approach To Undescended Testis

Figure 2. Intraoperative Finding Of Undescended Testis Showing Undescended Testis

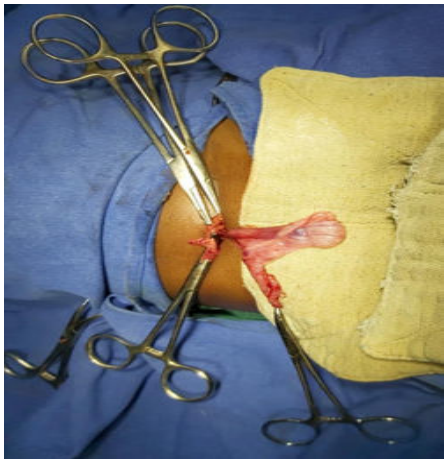


Figure 3 Showing Intraoperatve Picture Of Undescended Testis

Figure 4 showing scrotal incision for subdartos pouch

Figure 5 showing laparoscopic orchidopexy

Materials And Method

Source Of Data

It includes the patients admitted for undescended testis and related surgically in Government Vellore medical college hospital, in Department of General Surgery.

Study population

50 Positive Finding Cases Of Undesended Testis

Inclusion criteria

1. Patients diagnosed with undescendent testes
2. Patients willing for surgery
3. upper age limit Is upto 16 years of age

Exclusion criteria

1. Patients with retractile and ectopic testis
2. Patients not willing/ unfit for surgery
3. Patients with bilateral non-palpable undescended testis
4. Age more than 15 years of age.

METHODOLOGY

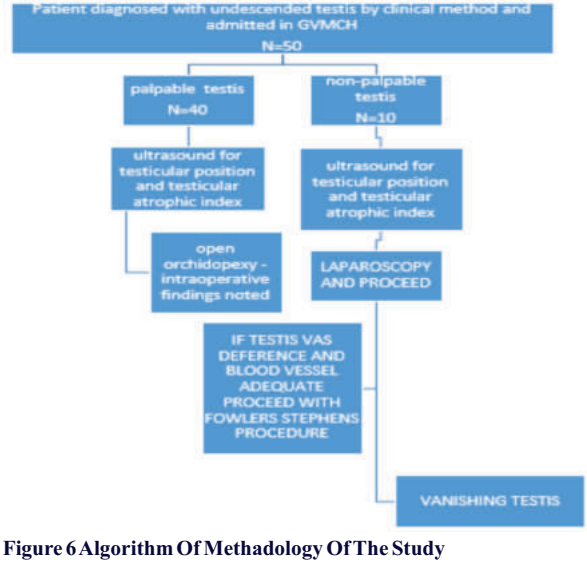


Figure 6 Algorithm Of Methadology Of The Study

In this study, patient brought by their parents for Undescended testis divided into two groups group A - palpable undescendend testis for open group B- non-palpable undescendent testis , opting for laparoscopic management in which undergoes single and double staged treatment

It includes, collecting details of patients regarding,

1: Age wise distribution.
2. Clinical presentation associated anamolies
3. Sides of presentation
4. Palpable or non-palpable
5. Preoperative Ultrasound findings Relation between the position and palpability of testis.
6. Types of operative procedures
7. Intraoperative findings - Relation between the position and palpability of testis
8. Postoperative complications
9. Duration of hospital stay

For the management of unilateral palpable testis, Laparoscopy should be reserved for patients with non-palpable undescended testes. for non-palpable undescended testes if age less than 4 years single staged laparoscopic procedure and if age more than 4 years double staged laparoscopic procedure

In laparoscopy method to opt single and two staged procedure Intra Op Distance Between Testis And Deep Ring, mobility of the testis to the contralateral ring noted, compiling treatment procedures for patients and following up postoperatively during hospital stay.

Testicular atrophy index is a valuable and objective tool for assessment of the state of development of the testis at every stage of UDT treatment. In this study preoperative Testicular atrophic Index is used to predict outcome of vanishing testis.

Ethical Considerations

The following ethical guidelines were put into place for the research period: October 2018 to September 2019

- The dignity and wellbeing of students was protected at all times.
- The research data remained confidential throughout the study and the

Researcher obtained the patients' permission to use their real names in the research report. Research protocol was presented in Institutional Ethical review Board and due permission was obtained to undertake the study

Conflict of Interest

Study is self-sponsored with support from institution. There is no commercial or conflict of interest

OBSERVATION AND RESULTS

The following study was conducted at Government VELLORE MEDICAL COLLEGE AND HOSPITAL hospital which is the hospital attached to GOVERNMENT VELLORE Medical College. A total of 50 patients participated in this study. All the patients were selected randomly .The study was conducted for the period of 12 months from October 2018 to September 2019. For all patients clinical study was done through questionnaires and clinical examination.

Age Of Presentation

Out of 50 patients, 6 patients, presented at the age between 0 to one year, 22 patients presented at the age between one year to 5 years, 12 patients presented at the age between 5 years to 10 years, 10 patients presented at the age between 10 to 15 years .

Table 1 Age Of Presentation

S.NO	AGE OF PRESENTATION	PALPABLE	NON PALBABLE	No.OF PATIENTS
1	O - 1 YEAR	5	0	6
2	1 YEAR TO 5 YEARS	11	0	22
3	5 YEARS TO 10YEARS	15	7	12
4	10 - 15 YEARS	9	3	10
TOTAL		40	10	50

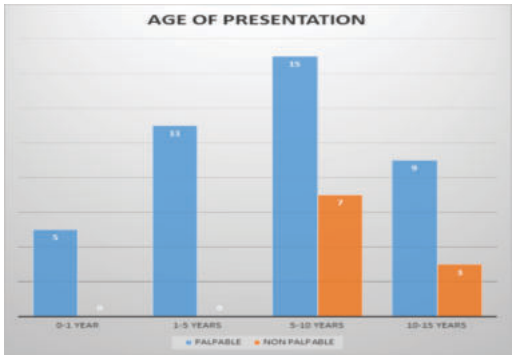


Figure 7 showing Graphical presentation of Age of Presentation

2.Mode of presentation

Out of 50 cases, 14 patients presented as swelling in inguinal region, 35 patients presented with complaints of empty scrotum, in those patients on examination 26 patients with palpable testis in groin region and remaining 9 patients with non-palpable testis, 1 patient admitted for phimosis and on clinical examination found to be empty scrotum in right side and non palpabe undescended testis .

Table 2 modes of presentation

S.No	Modes of presentation	Palpable	Non-palpable	Total No.of patients
1	swelling in inguinal region associated with inguinal hernia In contralateral side	1	0	14
2	complaints of empty scrotum	38	9	35
3	admitted for phimosis, on examination detected	0	1	1
4	Associated with hypospadiasis	1	0	1
	Total	40	10	50

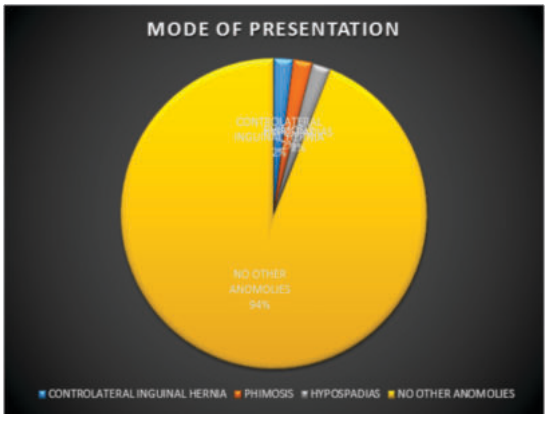


Figure 8 showing Pie chart of Mode Of Presentation

1. Palpable And Non-palpable

In our study, out of 50 patients , 10 patients presented as non-palpable and 40 patients presented as palpable undescended testis

Table 3 Palpable And Non-palpable

PALPABLE	NON-PALPABLE	TOTAL
40	10	50

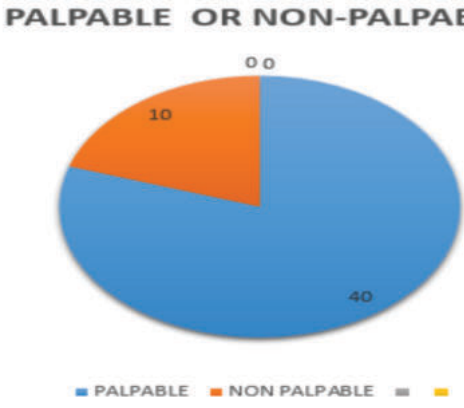


Figure 9 Pie Hart Of Palpable And Non-palpable Chart

4. Side Of Undescended Testis

In our study, out of 50 cases, 24 cases of right side, 20 cases of left side and 6 cases of bilateral side. Thus, most common affected side is Right side

Table 4 side of UDT

SIDE	NO.OF CASES	PERCENTAGE
RIGHT	24	48 %
LEFT	20	40 %
BILATERAL	6	12%

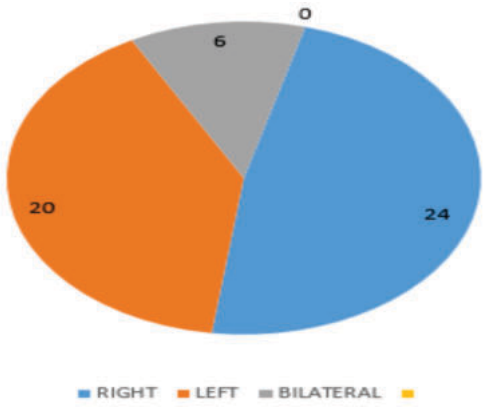


Figure 10 Pie Chart Of Sides Of Presentation

Table 5 Relation Between Sides And Palbable / Nonpalbable

SIDE	PALPABLE	NON-PALPABLE
RIGHT	21	3
LEFT	13	7
BILATERAL	6	0

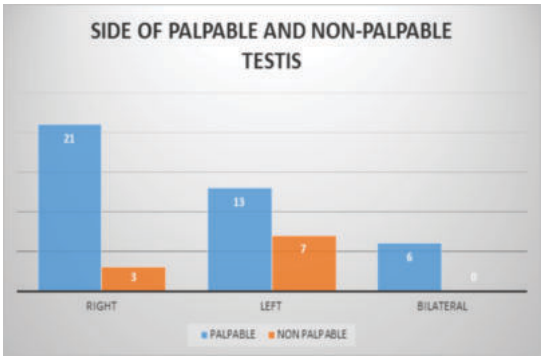


Figure 11 Graph Showing Sides Of Presentation

5. Relation between the position and palpability of testis.

Out of 50 patients, 40 Patients with palpable and 10 patients with non-palpable testis . In 40 patients of palpable testis , 40 patients with intra canalicularposition ,10 patients with non-palpable testis , among 10 patients, 2 cases with intra-abdominal position and 8 patients with intra canalicular position.

Table 6 Relation Between Palpability And Testicular Postion

	PALPABLE	NON-PALPABLE
INTRA CANALICULAR	40	8
INTRA ABDOMINAL	0	2
TOTAL	40	10

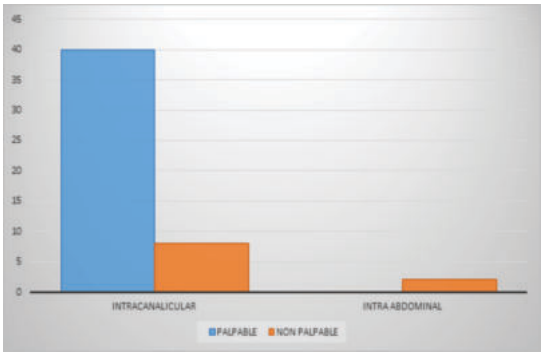


Fig 12 Relation between the position and palpability of testis

6. Preop Ultrasound Findings

Out of 50 patients, among 40 patients of palpable undescended testes, 40 patients undergone preoperative ultrasound, in which all patients with intracanalicular position.10 patients of non-palpable undescended testis, 10 patients undergone preoperative ultrasound

imaging, in which, 4 patients inconclusive /testis not visible, 1 patient with intra abdominal and 5 patients with inracanalicular position .

Table 7 Preop Ultrasound Findings

POSITION	PALPABLE	NON-PALPABLE
INTRA CANALICULAR	40	5
INTRA ABDOMINAL	-	1
NOT VISUALISED TESTIS	-	4

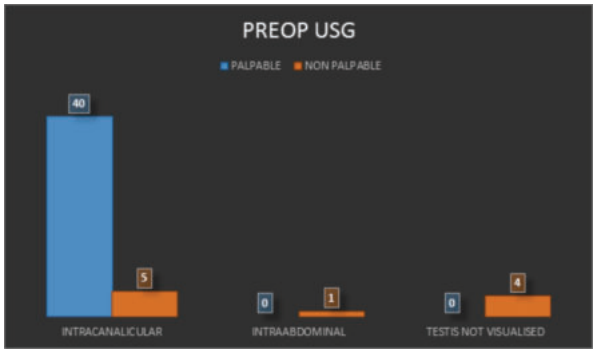


Figure 13 Showing Preoperative USG Finding

Intraoperative findings

7. Types of operative procedures

Out of 50 patients, 40 patients of palpable testis patients undergone open, and 10 patients undergone Diagnostic laproscopy and in which 4 patients of Vanishing testis syndrome, and 6 patients undergone Fowlers staged procedure. In 6 patients, 4 patients undergone Fowlers single staged procedure, 2 patients undergone double staged procedure.

Table 8 Types Of Operative Procedures

PROCEDURE	PALPABLE	NON-PALPABLE	Percentage
OPEN	40	-	80 %
FOWLERS PROCEDURE	-	6	12%
VANISHING TESTIS	-	4	8%

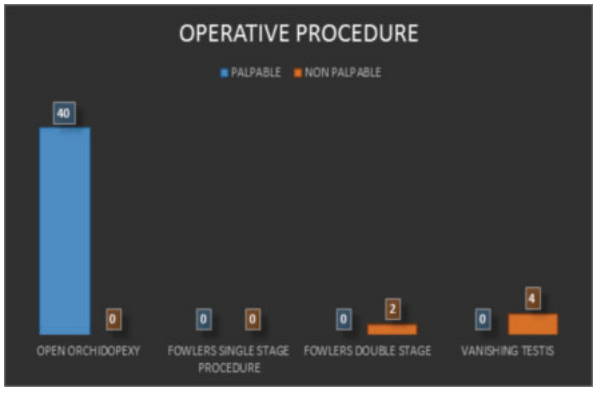
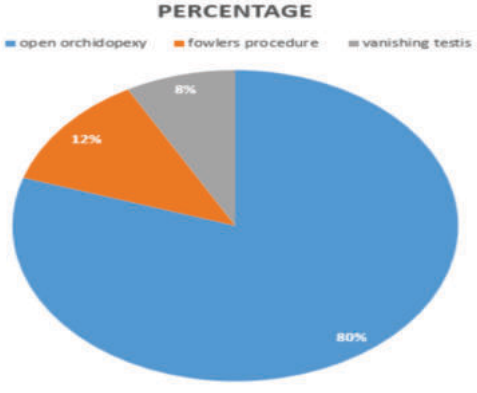


Figure 14 Operative Procedure Graph Representation



8.Postoperative complications

Out of 50 patients, followed up for postoperative complication Wound hematoma in one palpable patient, postoperative infection on one patient.

Table 9 Showing Operative Finding

	Palpable	Non-palpable testis
Wound hematoma	1	0
infection	1	0
Retractile testis	0	0

9. Duration of hospital stay

Table 10 duration of hospital stay

Duration of hospital stay	palpable	Non-palpable
Less than2 days	37	0
2 to 4 days	1	10
>4 days	2	0

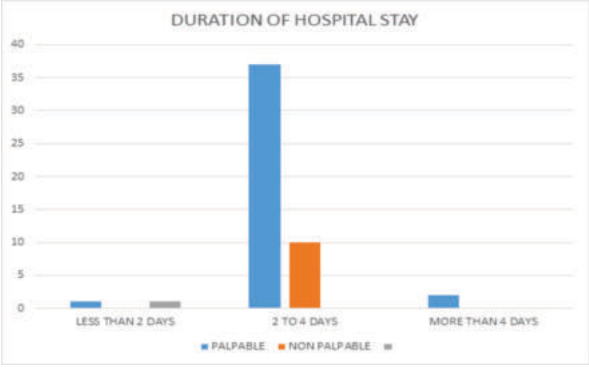


Figure 15 showing duration of hospital stay graphic representation

Testicular atrophic Index

Ultrasound studies were performed by using 7.5 and 10 MHz transducers. In the assessment of undescended testicle, the largest measurements in each dimension were The usefulness of testicular atrophy index .(31) The testicular volume (TV) can be calculated by using the empirical formula of Lambert:

TV (ml) = 0.71 x (width x length x height)/1.000.

The testicular atrophy index (TAI) of the affected testicle was calculated as:

TAI = (contralateral testis volume – affected testis volume) x 100
Contralateral testis volume

TAI is expressed as a percent.

Out of 50 patients ,testicular atrophic index measured for 34 patients , ultra sound abdomen plays important role in measuring testicular volume. here listed mean TAI for palpable and non-palpable undescended testis, with procedures done

For 34 patients done ultrasound abdomen , among 34 patients 10 patients with non-palpable testis, among them 4 patients vanishing testis syndrome, with mean TAI of 60 %, For remaining 6 patients eith mean TAI of 13 %, for remaining 24 patients with mean TAI of 11 % are palpable testis.

	Mean TAI
PALPABLE UNDESCENDED TESTES UNDERGONE OPEN	12 %
LAPROSCOPIC WITH VIABLE TESTES	13%
VANISHING TESTIS	60 %

SO TAI with more value suggests or implies vanishing testis syndrome.

DISCUSSIONS

In our hospital, admitted out of 50 patients, 40 patients (80 %) with palpable undescended testis, 10 patients with non-palpable testis (10%). Among 40 patients of palpable undescended testis patients, 52 % (n= 21/40) of palpable testis patients with right sided presentation, 33% (n=13/40) of patients with left sided presentation,15 % (n=6/40) of patients with bilateral presentation.

In 10 patients of Non-palpable testis, 30 % (n=3/10) of non-palpable testis patients with right sided presentation, 70 % (n= 7/10) of palpable

testis patients with left sided presentation .

In palpable undescended testis, mean age of presentation is 8 years, among undescended testis, mean age of presentation is 7 years, smallest among them is 10 month child, largest is 15 years of age.in non-palpable testis , mean age of presentation is 10 years .

Table 11 correlation between TAI and palpable /non-palpable testis p value =0.000 (<0.05)

TAI * WHETHER PALPABLE	Obs	Mean	Std Dev	Min	25%	Median	75%	Max	Mode
NON-PALPABLE	6	38.1667	25.3883	14	15	38.5	61	62	61
PALPABLE	40	11.6725	0.3537	11	11.4	11.6	12	12.5	12

Table 12. Age in relation with presentation

	NON-PALPABLE	PALPABLE	Total
EARLY AGE <8 years	2	23	25
LATE AGE >8 years	8	17	25
Total	10	40	50

Earlier age presentation in palpable undescended testes, comparatively late age presentation in non-palpable UDT. Odds ratio with Confidence Interval 95 %, p value =0.000 (<0.05) p value = 0.00 (<0.05) , x2 = 46.0 , 2 tailed p = 0.00 CI – 95 %

Table 13 Showing Testicular Atrophic Index In Relation To Vanishing Testis With P Value = 0.00 (< 0.5)

	VANISHING TESTES	NORMAL TESTES	Total
Low TAI < 20%	0	43	43
High TAI >20 %	3	0	3
Total	3	43	46

Testicular atrophic index (preoperative USG) for both palpable and non-palpable testis patients compared with intraoperative findings of normal testes and vanishing testes, TAI value less than 20 % taken as low and more than 20% as high , thus with high testicular index for three patients with vanishing testes syndrome . TAI with high index can predict vanishing testis syndrome with p value 0.00 (<0.05).

CONCLUSION

Undescended testis, one of the most common congenital disease , In this study right side as most common side of presentation , with earlier age presentation in palpable undescended testis and In non-palpable undescended testis with late age presentation . Among palpable and non-palpable Undescended testis, palpable is more common than non-palpable undescended testis. Vanishing testis in non-palpable testis of about 8% incidence with preoperative Ultrasound predicts vanishing testis by Testicular atrophic index if more than 60 %. Associated congenital anomalies in this study was phimosis, hypospadias and congenital inguinal hernia was studied. Approximately 10 percentage of tumor occurs in testes with maldescended testis. However testicular malignancy and in fertility could not be studied in this study as needed long duration for follow up.

DATA SHEET

NAME -
AGE -
IP.NO -
PRESENTATION-
SIDE OF UDT -
EXAMINATION FINDING – PALPABLE /NON PALPABLE
OTHER ASSOCIATED ANOMOLY -
ULTRASOUND FINDING-
PROCEDURE –
INTRAOP FINDING –
POST OP PERIOD -

Master Chart

NAME	AGE	SIDE	WHETHER PALPABLE	TAI	HOSP STAY	VIABILITY	USG	POSITION OF TESTES	ASSOCIATED	PROCEDURE
NAVEEN	8	BILATERAL	PALPABLE	11.3	1	V	C	C	N	O
SURYA	13	BILATERAL	PALPABLE	11.6	1	V	C	C	N	O
UDHAYASHANKAR	7	BILATERAL	PALPABLE	11.6	1	V	C	C	N	O
GOKUL	5	BILATERAL	PALPABLE	12	1	V	C	C	N	O
RAM PRASANTH	3	BILATERAL	PALPABLE	12	1	V	C	C	N	O
AFROS	7	RIGHT	PALPABLE	11.5	1	V	C	C	N	O
VIJAY	6	BILATERAL	PALPABLE	11.4	1	V	C	C	N	O
NAGHUL	8	LEFT	PALPABLE	11	1	V	C	C	N	O
PRITHVIRAJ	8	LEFT	NON PALPABLE		2	V	N	C	N	L
LOKESH	14	LEFT	NON PALPABLE		2	V	N	C	N	L
SAI SARATH	9	LEFT	NON PALPABLE		2	NV	N	C	N	L
HAREESHWARAN	3	LEFT	NON PALPABLE	62	2	NV	C	C	N	L
VENKATESH	10	LEFT	NON PALPABLE	15	2	V	C	C	N	L
ASWIN	12	LEFT	NON PALPABLE	61	2	NV	C	C	N	L
RAJESH	15	LEFT	NON PALPABLE		3	V	N	C	N	L
SABARINATHAN	9	LEFT	PALPABLE	11.2	1	V	C	C	N	O
SURENDHRAN	12	LEFT	PALPABLE	11	5	V	C	C	N	O
ASHWIN	1	LEFT	PALPABLE	12	1	V	C	C	P	O
DINESH	12	LEFT	PALPABLE	11.2	1	V	C	C	N	O
DHARSHAN	3	LEFT	PALPABLE	12	1	V	C	C	N	O
VINOTH	1	LEFT	PALPABLE	11.8	1	V	C	C	N	O
POORNESH	3	LEFT	PALPABLE	11.6	1	V	C	C	N	O
YOGA KATHIR	3	LEFT	PALPABLE	11.6	1	V	C	C	N	O
PRATHAP	4	LEFT	PALPABLE	11.8	1	V	C	C	N	O
KISHORE KUMAR	10	LEFT	PALPABLE	12	1	V	C	C	N	O
GOWTHAM	7	LEFT	PALPABLE	12.5	1	V	C	C	N	O

HARIHA RASUDHAN	11	LEFT	PALPABLE	11.5	1	V	C	C	N	O
KALAIYARASAN	7	RIGHT	NON PALPABLE	16	2	V	C	C	N	L
RAJU	10	RIGHT	NON PALPABLE	61	2	NV	C	C	N	L
SEETHARAM	9	RIGHT	NON PALPABLE	14	2	V	A	A	N	FS2
RITHIN	7	RIGHT	PALPABLE	11.3	1	V	C	C	N	O
UDHAYAN	1	RIGHT	PALPABLE	12	1	V	C	C	N	O
HEMACHANDRAN	11	RIGHT	PALPABLE	12.1	5	V	C	C	N	O
RAMESH	7	RIGHT	PALPABLE	12	1	V	C	C	N	O
MOORTHI	3	RIGHT	PALPABLE	12	1	V	C	C	N	O
DEEPAK	6	RIGHT	PALPABLE	12.4	1	V	C	C	N	O
ABISHEK	8	RIGHT	PALPABLE	11.6	1	V	C	C	N	O
RAGUL	2	RIGHT	PALPABLE	12	1	V	C	C	N	O
UDHAYA	14	RIGHT	PALPABLE	12	1	V	C	C	N	O
MADHAN	11	RIGHT	PALPABLE	11.6	1	V	C	C	N	O
BHUVANESH	1	RIGHT	PALPABLE	11.6	1	V	C	C	H	O
KISHORE	2	RIGHT	PALPABLE	11.4	1	V	C	C	N	O
MOHAN	11	RIGHT	PALPABLE	11.7	1	V	C	C	N	O
SABARINATH	9	RIGHT	PALPABLE	11.4	1	V	C	C	N	O
MANGALAM	7	RIGHT	PALPABLE	11.6	1	V	C	C	N	O
LOKESH	7	RIGHT	PALPABLE	11.5	1	V	C	C	N	O
YOGESH	12	RIGHT	PALPABLE	11.4	1	V	C	C	N	O
NAVEEN	7	RIGHT	PALPABLE	12	1	V	C	C	N	O
ARJUNAN	14	RIGHT	PALPABLE	11.3	1	V	C	C	N	O
SUKRAN	11	RIGHT	PALPABLE	11.4	1	V	C	C	N	O

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