



Ultrasound-guided Fine-Needle Aspiration Biopsy Is An Efficient Diagnostic Tool In Thyroid Nodules

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Introduction

- ❖ Thyroid nodules are commonly encountered in clinical practice:
 - Simple clinical examination reveals nodules 4-7% of subjects examined, the frequency increasing to 5-20% in areas of endemic goiter.
 - The actual frequency of thyroid nodules is significantly higher and increases with age -> autopsy studies record frequency of 40-50%.
- ❖ The main diagnostic problem is the benign or malignant nature of the nodules.
- ❖ Fine-needle aspiration biopsy (FNAB) is a standard diagnostic test for evaluating thyroid nodules.
- ❖ Several studies have shown that the use of ultrasound guidance (US-FNAB) improves the diagnostic accuracy of aspiration biopsies in comparison with palpation guidance (P-FNAB) alone.

Patients and Methods

- ❖ We performed a retrospective study
 - to compare the efficacy of US-FNAB of thyroid nodules with that of P-FNAB.
- ❖ Study group:
 - patients referred to Endocrinology Department
 - for assessment of thyroid nodular disease who underwent:
 - P-FNAB between 2000-2001,
 - US-FNAB between 2009-2012.
- ❖ In order to avoid differences due to nodules size
 - only palpable nodules in both groups were selected.
- ❖ Thyroid examinations, ultrasound imaging, and aspiration biopsies were performed by the same endocrinologist.
- ❖ Histopathologic and cytologic results were compared for patients who were operated.

Results

- ❖ Study sample consisted of 403 patients.
 - P-FNAB performed in 106 patients
 - of which 32 underwent thyroidectomy
 - US-FNAB in 297 patients
 - of which 58 underwent thyroidectomy
- ❖ Excepting for moderate local pain in some cases, no adverse effects were noticed.

Chart 1. Patient distribution by sex

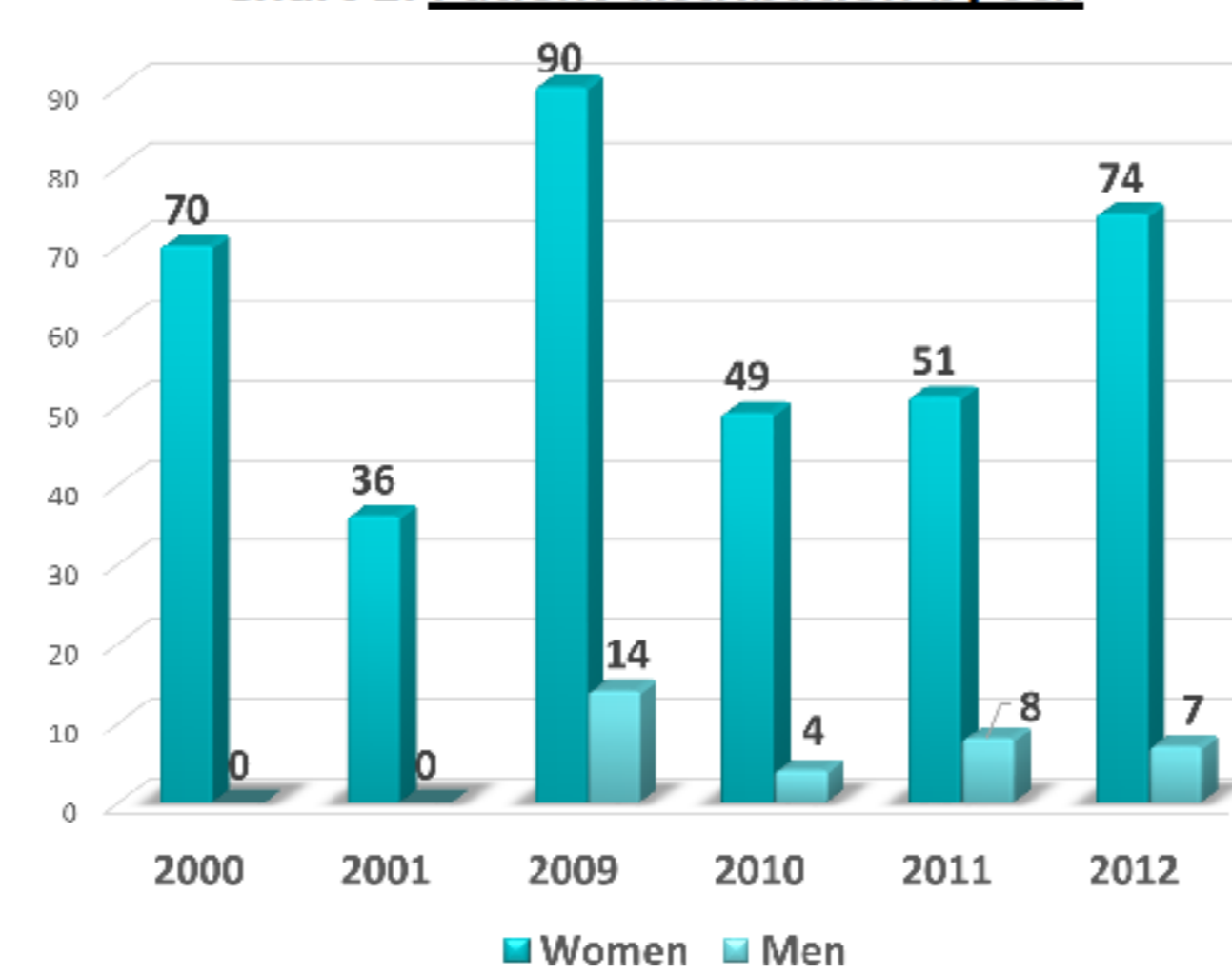


Chart 2. FNAB Classification by Bethesda System

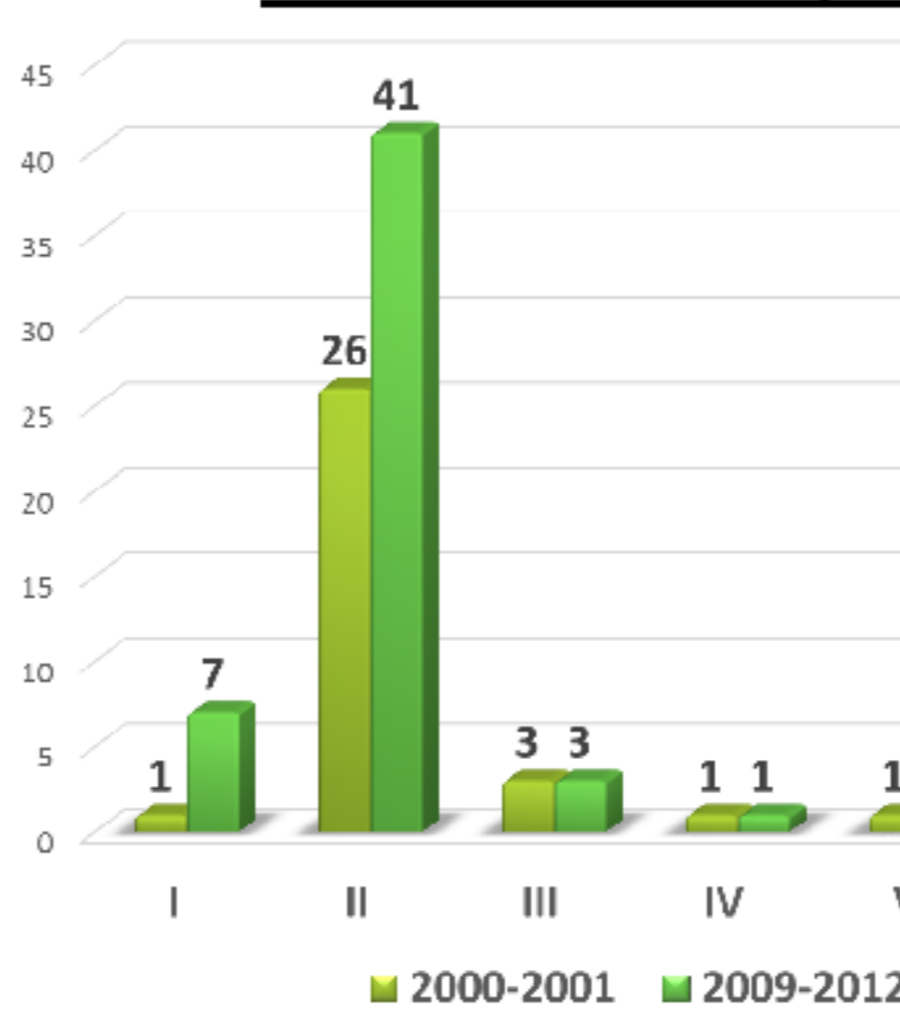


Chart 3. Histology results of the patients who underwent surgery

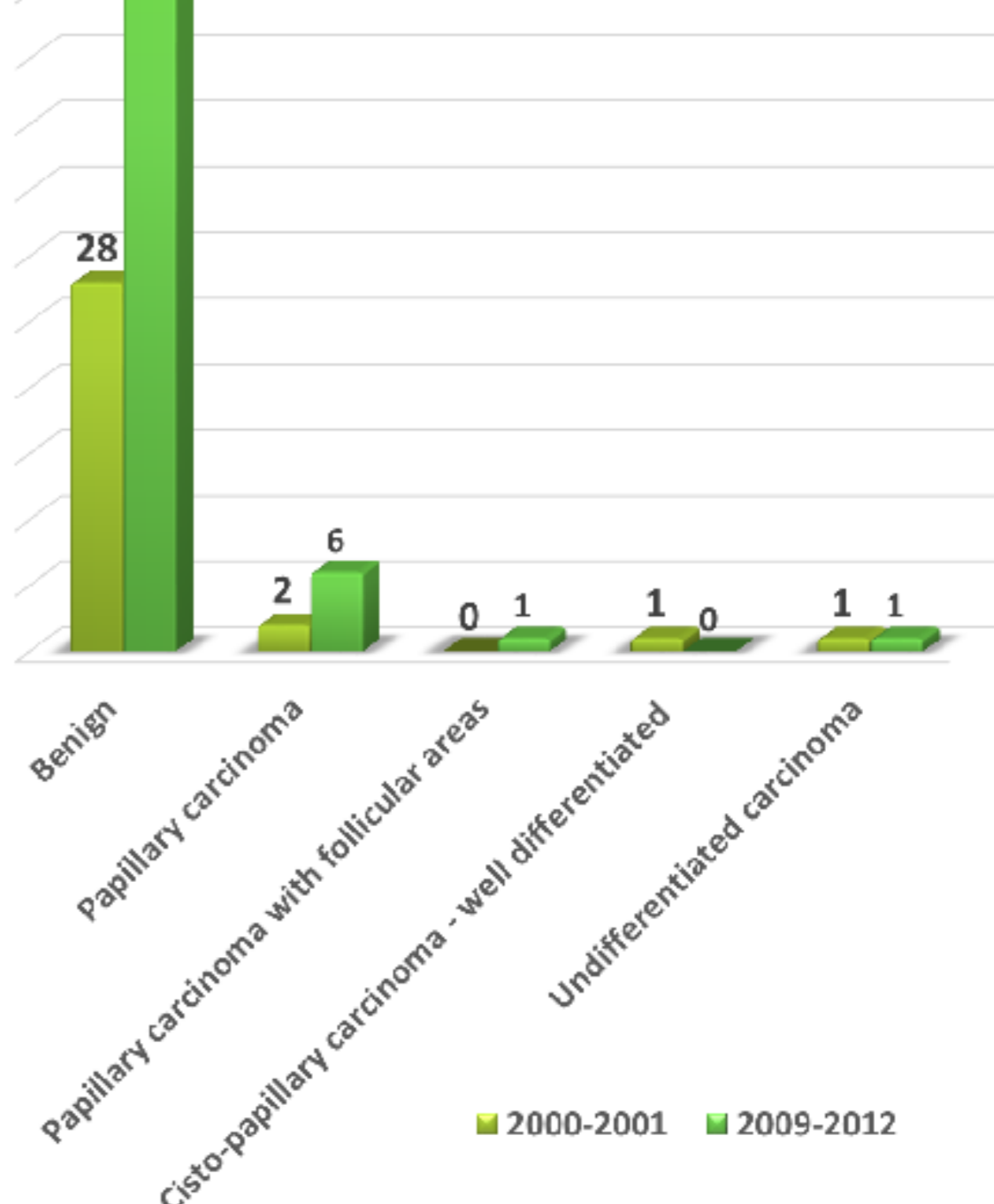


Chart 4. Patient distribution by age

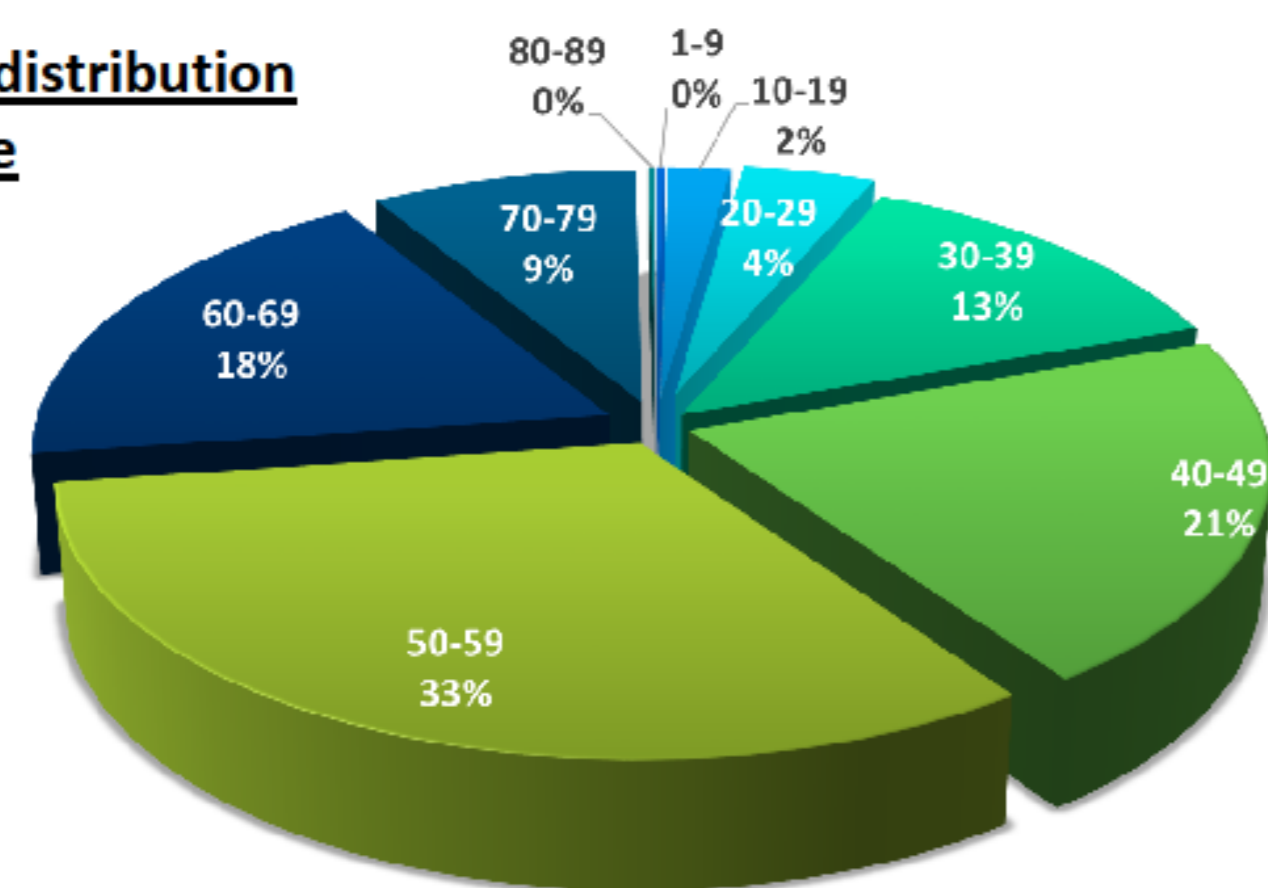


Chart 5. Patients who underwent surgery

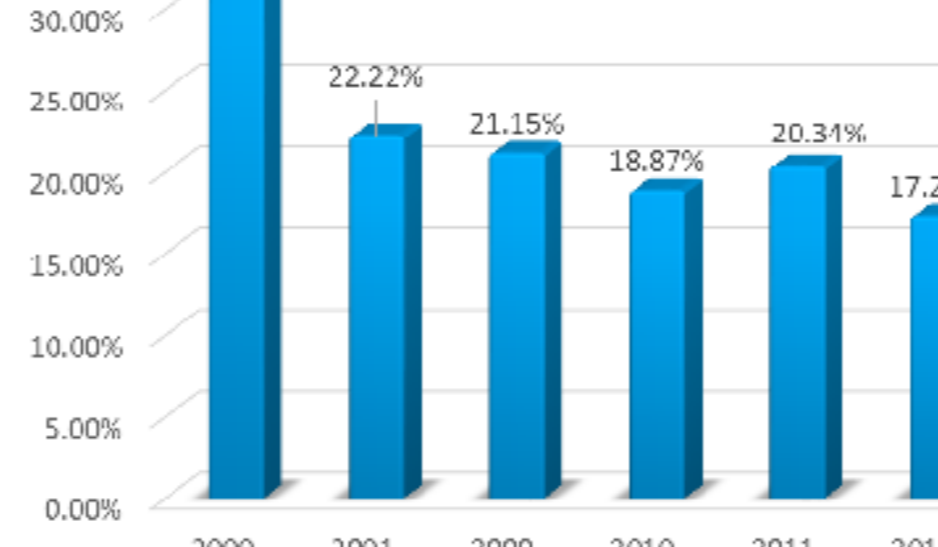
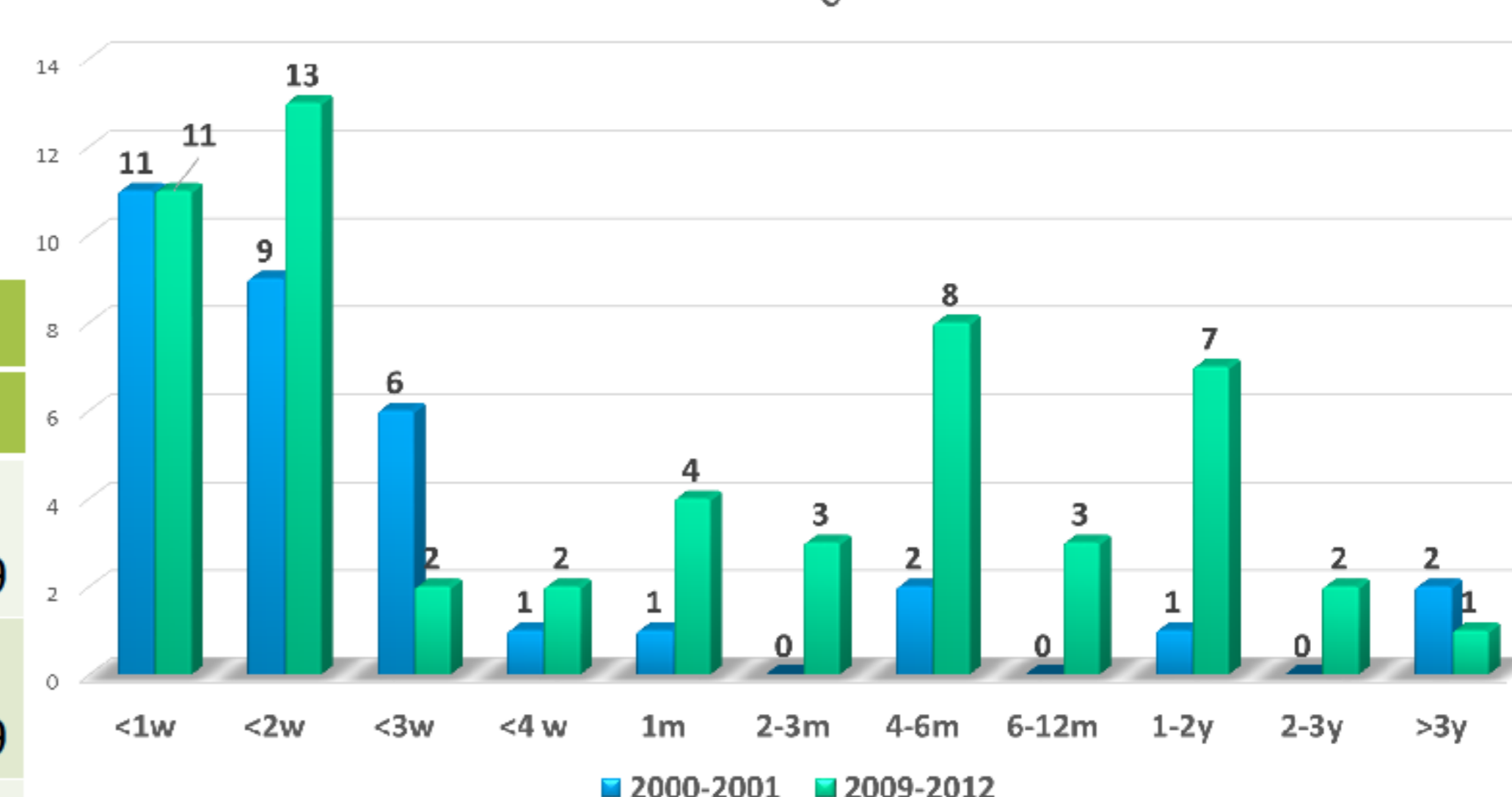


Chart 6. Time passed between FNAB and surgery



	P-FNAB 2000-2001	US-FNAB 2009-2012	US-FNAB Bibliography	
			MIN	MAX
The rate of true positive results (Sensitivity)	50%	85.71%	69% - Vereslst 1986	100% - Orgiazzi 1985 95.94% - Cristalini 1989
The rate of true negative results (Specificity)	88.88%	90.90%	72% - Orgiazzi 1985	100% - Orgiazzi 1985 94.73% - Cristalini 1989
The rate of false negative results	50%	14.28%	0.3% - Frable 1986 1% - Wang 1977	10,2% - Zajdla 1984
The rate of false positives results	11.11%	9.09%	1% - Molitch 1984 - Wang 1977 - Zajdla 1984	4.8% - Proye 1980
The positive predictive value	40%	60%	-	96.2% - Wang 1977
The negative predictive value	92.30%	97.56%	-	88.3% - Wang 1977
Prevalence	12.90%	13.72%	-	-
Overall performance (Accuracy)	83.87%	90.19%	50% - Van Herle 1981	95.2% - Cristalini 1989

- ❖ Cytologic diagnostic accuracy rate was 83.87% for P-FNAB and 90.19% for US-FNAB.
- ❖ With use of ultrasound guidance:
 - sensitivity (85.71% for US-FNAB, 50% for P-FNAB),
 - positive predictive value (60% US-FNAB vs. 40% P-FNAB),
 - negative predictive value (97.56% US-FNAB vs. 92.3% P-FNAB)
 - were increased significantly;
 - the false-negative rate (14.28% US-FNAB vs. 50% P-FNAB)
 - was significantly reduced.

Conclusions

- ❖ Fine-needle aspiration biopsy is an essential diagnostic tool in the management of thyroid nodules.
- ❖ US-FNAB improved the accuracy, sensitivity, and positive predictive value and reduced the false-negative rate of the cytologic diagnostic in comparison with P-FNAB.
- ❖ Therefore, practice guidelines should universally recommend US-FNAB in the management of thyroid nodules, permitting an accurate preoperative diagnostic and avoiding numerous unnecessary surgical interventions.

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