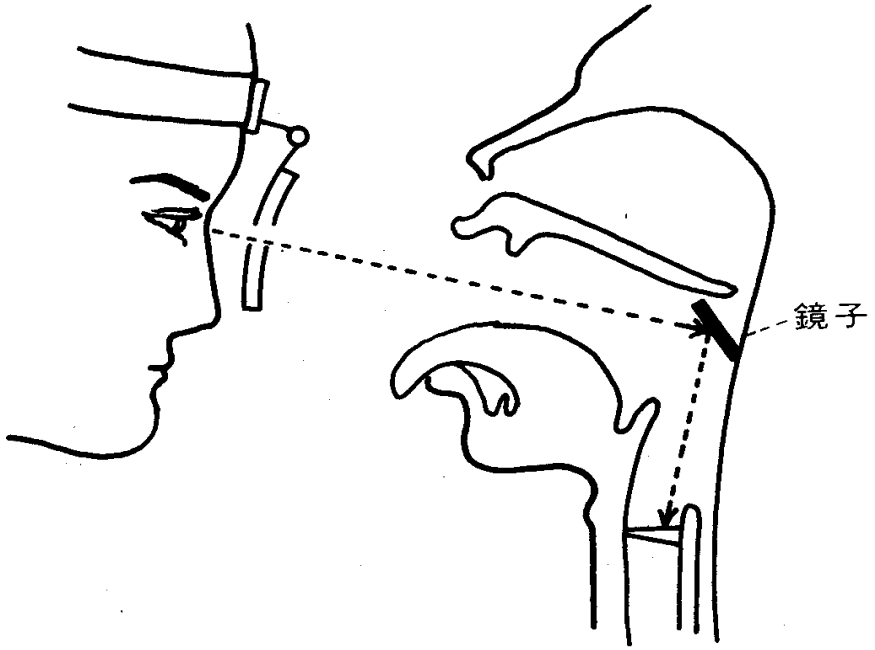
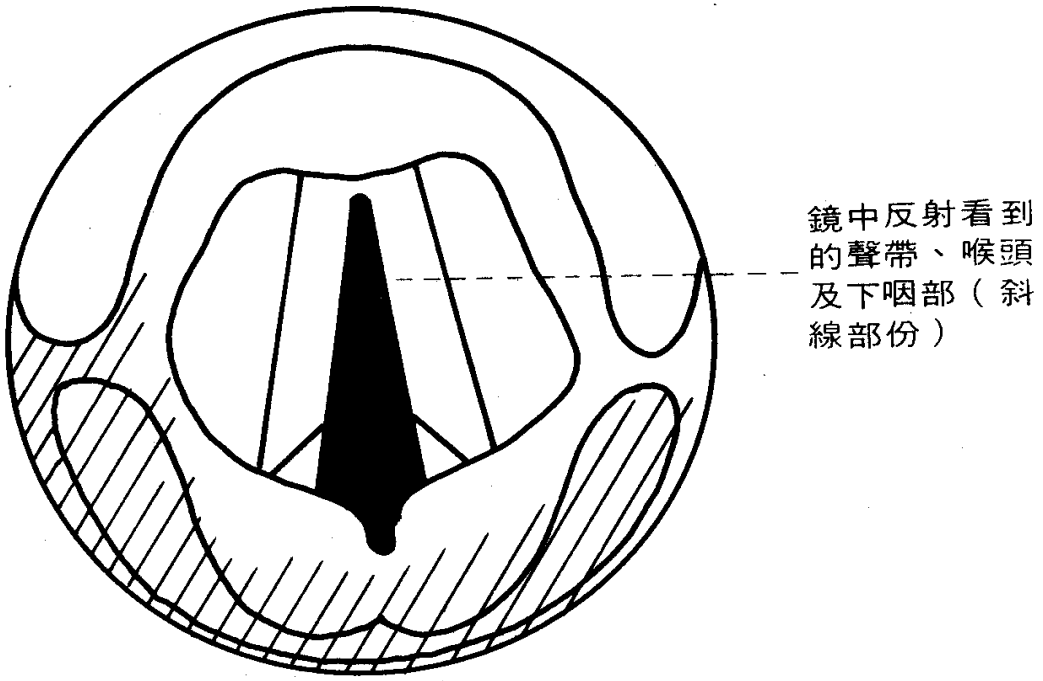
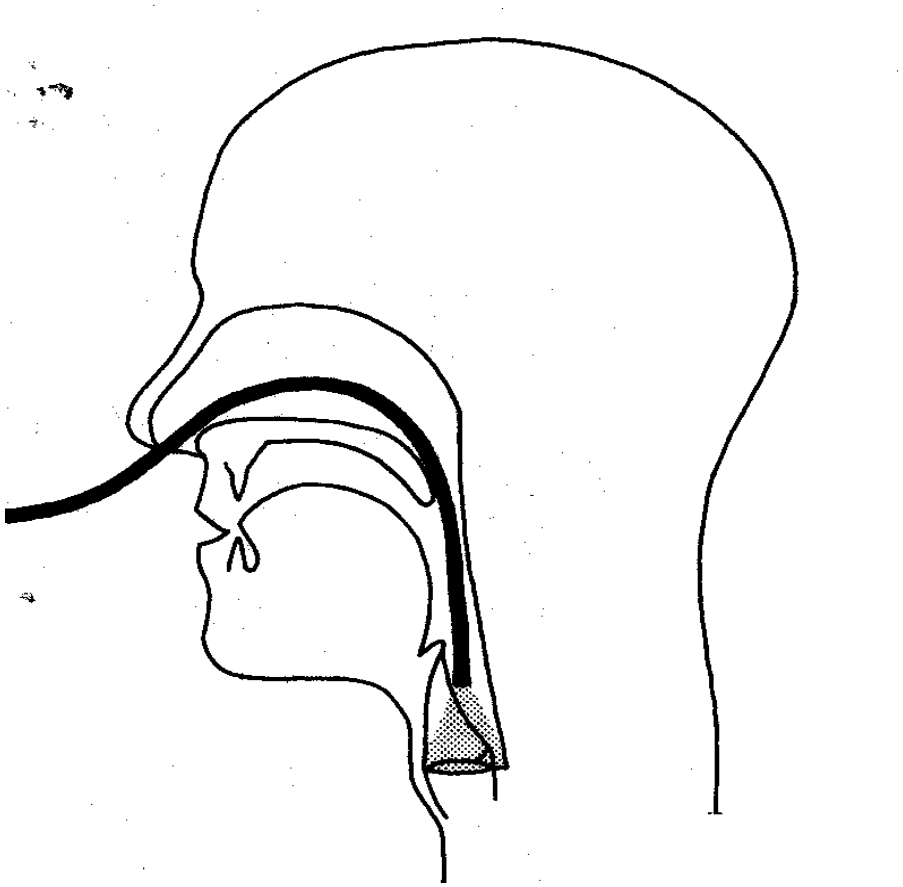


Mirror examination



Flexible endoscope position



Telescope position

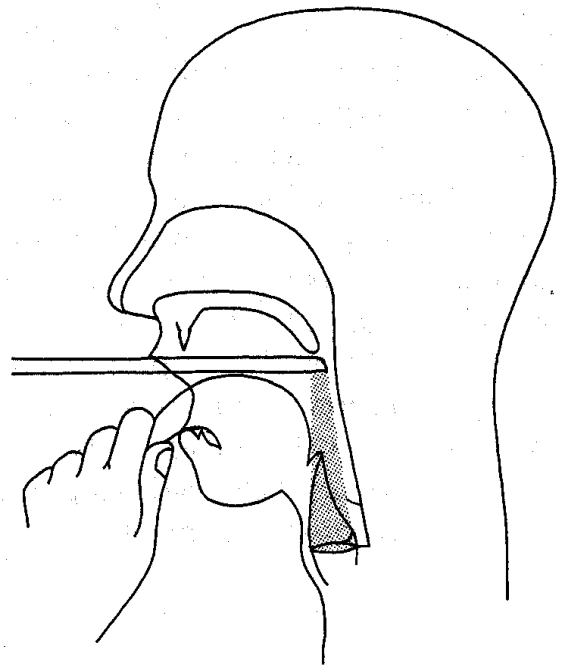


Figure 6-15. Ninety-degree endoscope position.

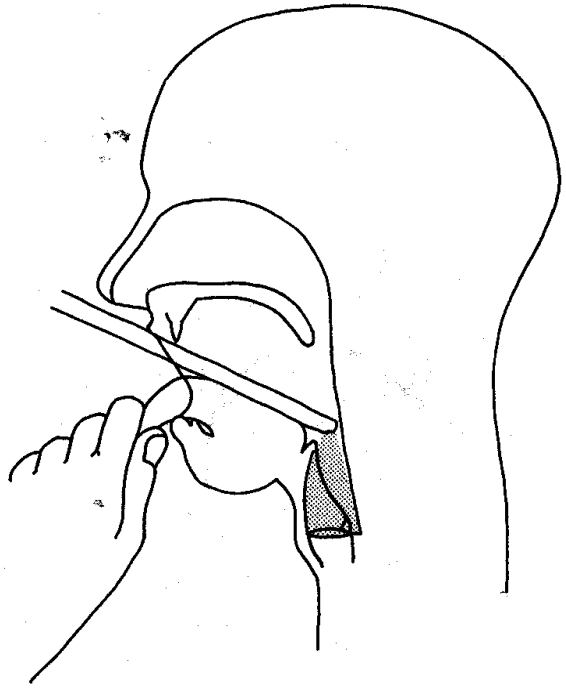
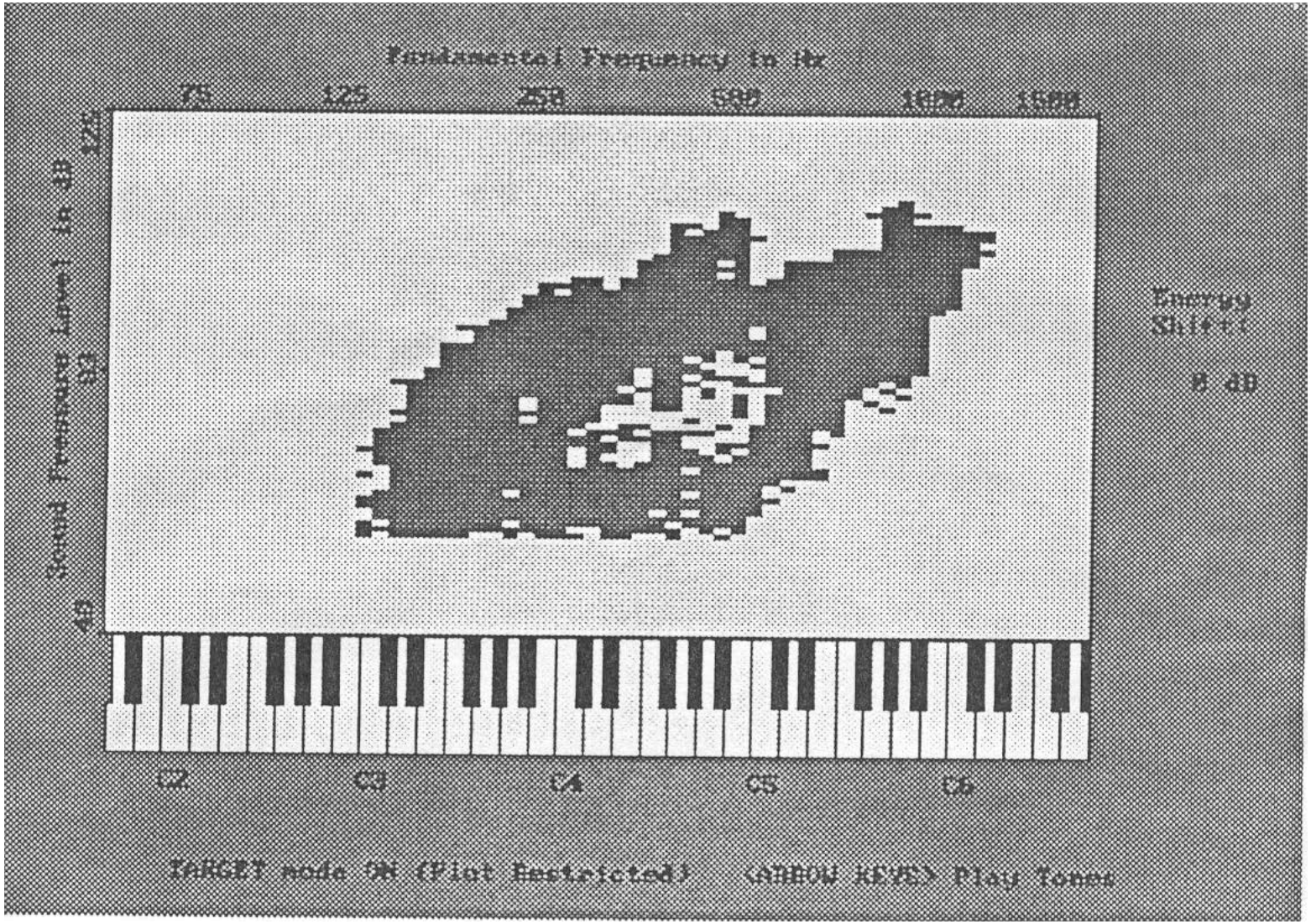


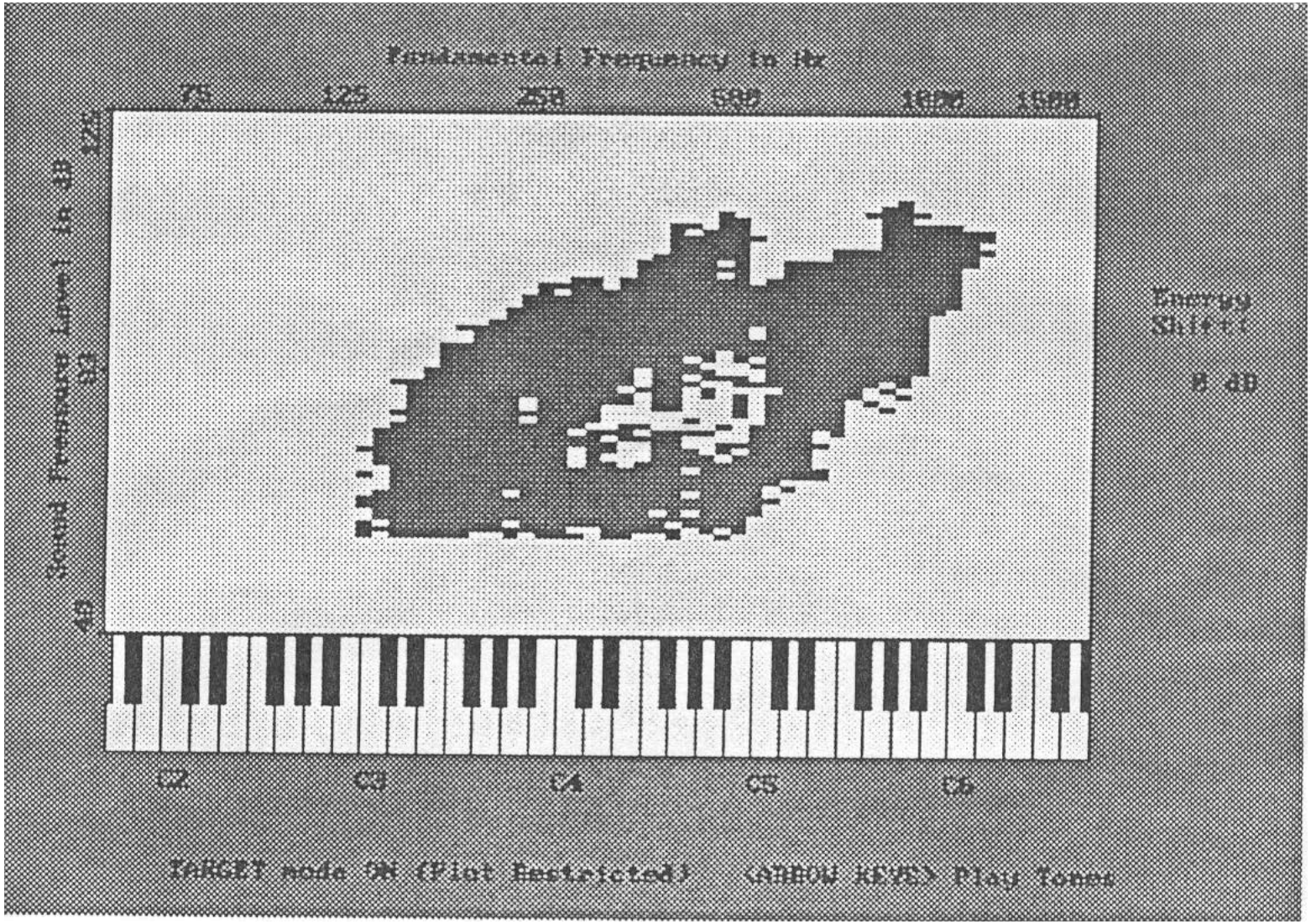
Figure 6-16. Seventy-degree endoscope position.

The stroboscopic unit for laryngeal imaging

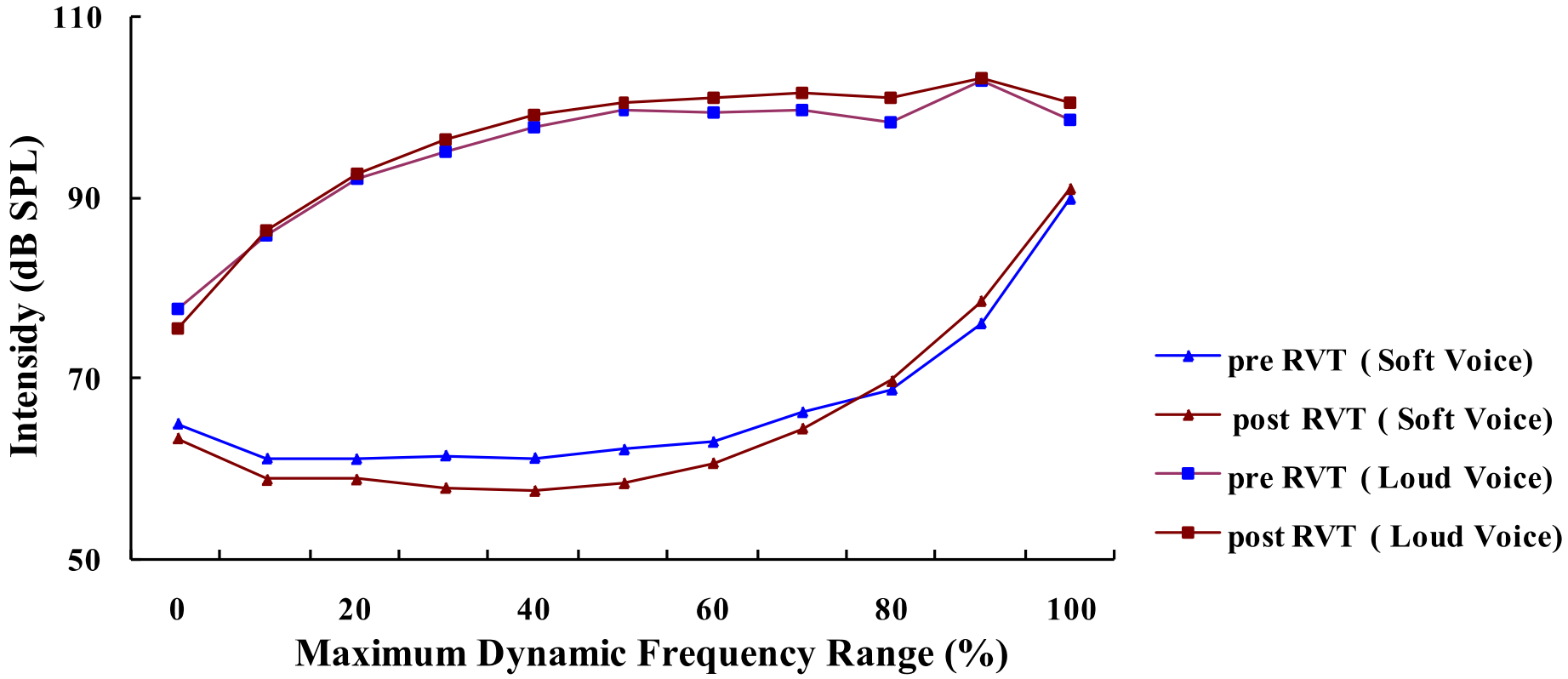
Vocal Range Profile (phonetogram) for a young adult normal female



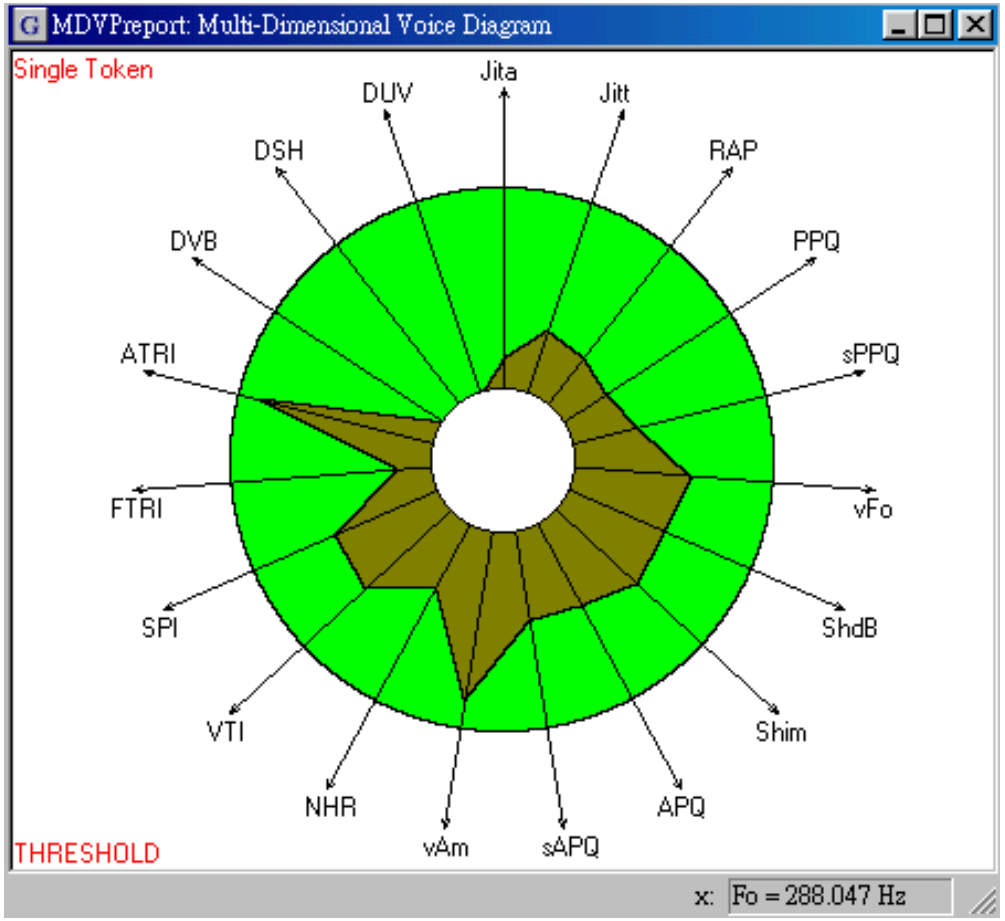
Vocal Range Profile (phonetogram) for a young adult normal female



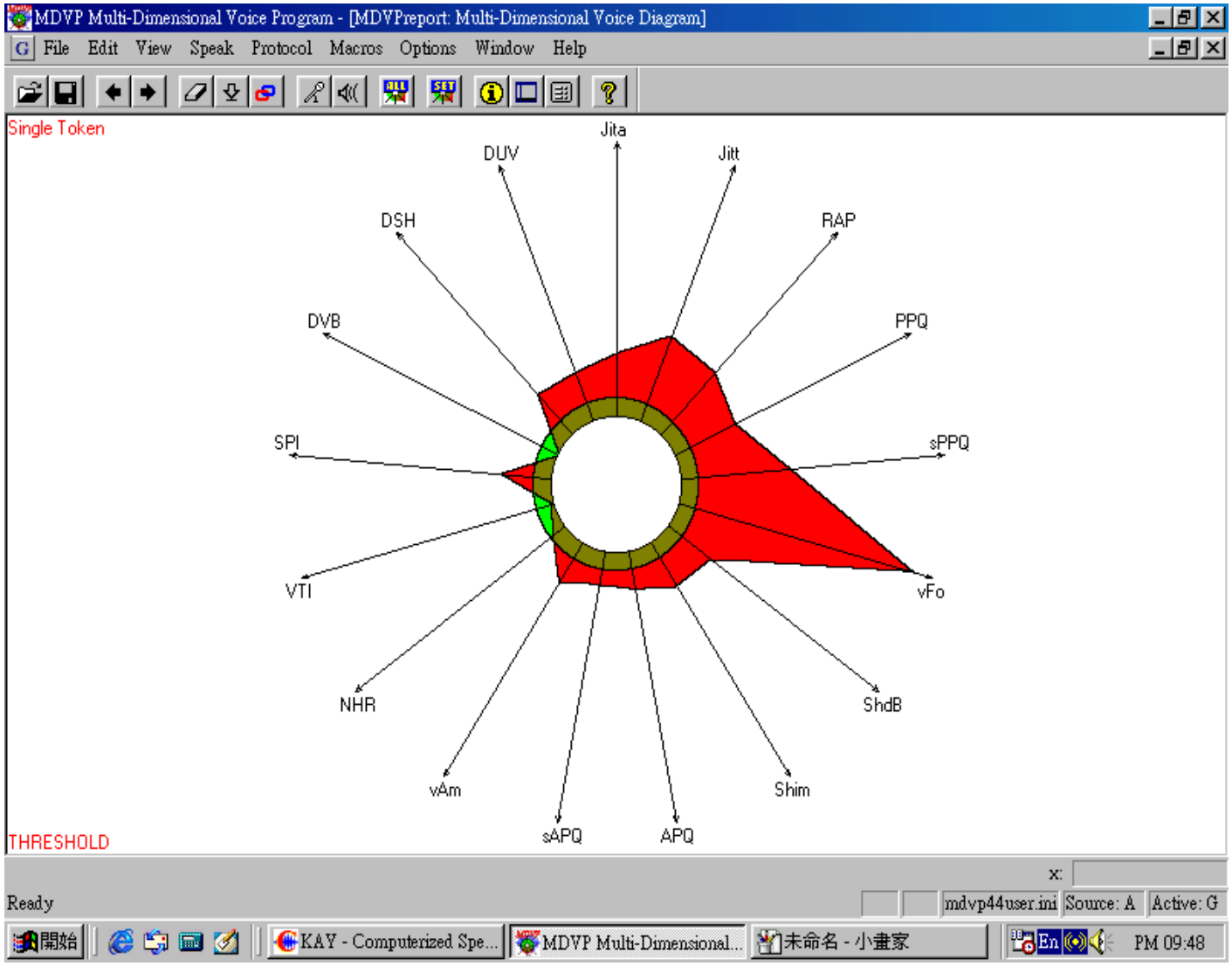
Phonetogram before and after Resonant Voice Therapy



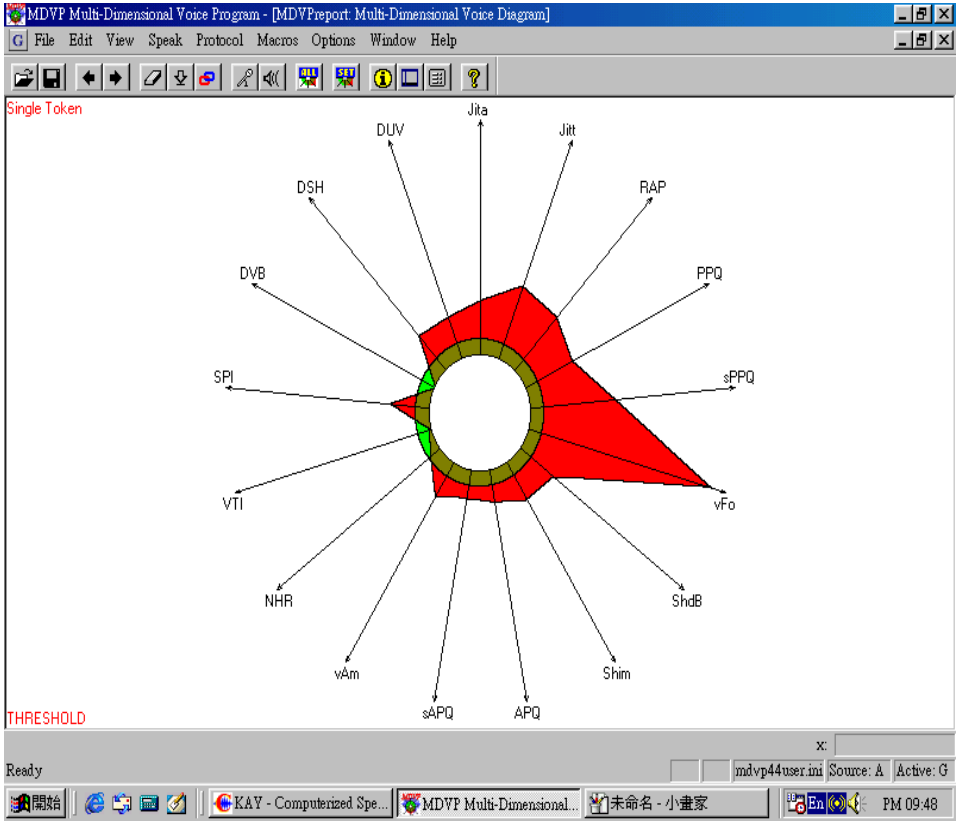
Multi-Dimensional Voice Program (MDVP) (Kay, Model 5105) - Normal voice, 29 years female

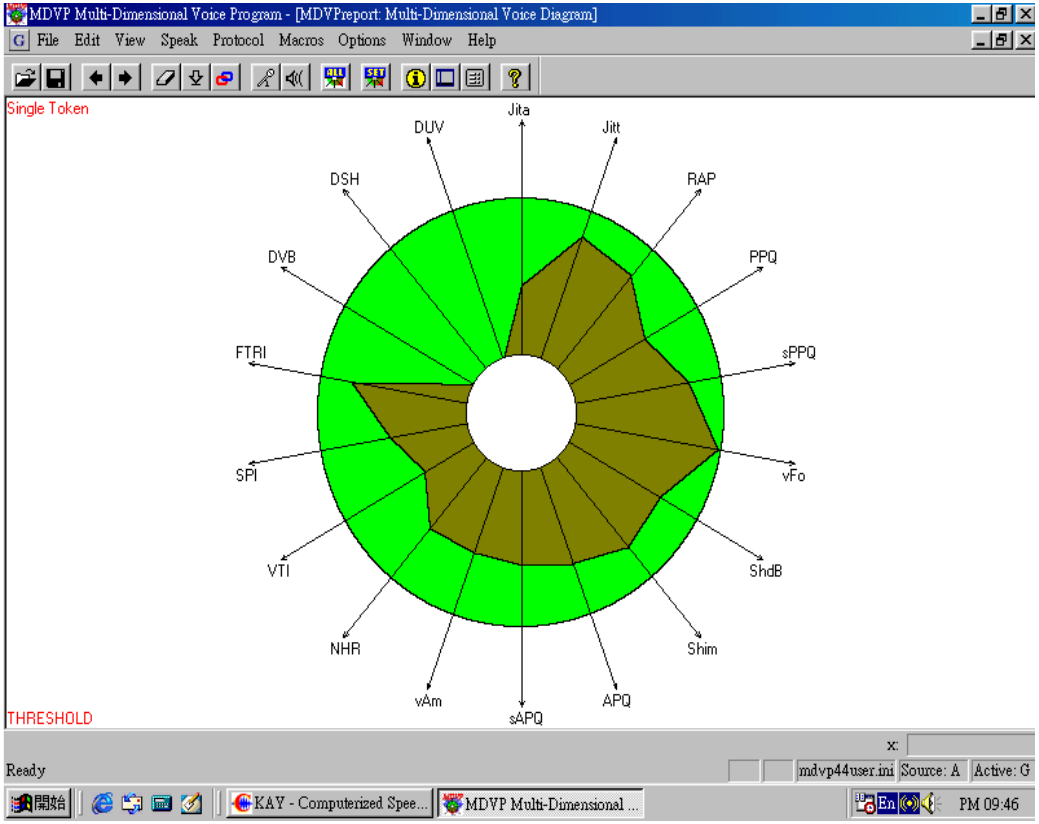


Multi-Dimensional Voice Program (MDVP) (Kay, Model 5105 – Hoarse voice (Rt vocal nodule, 50 years female)

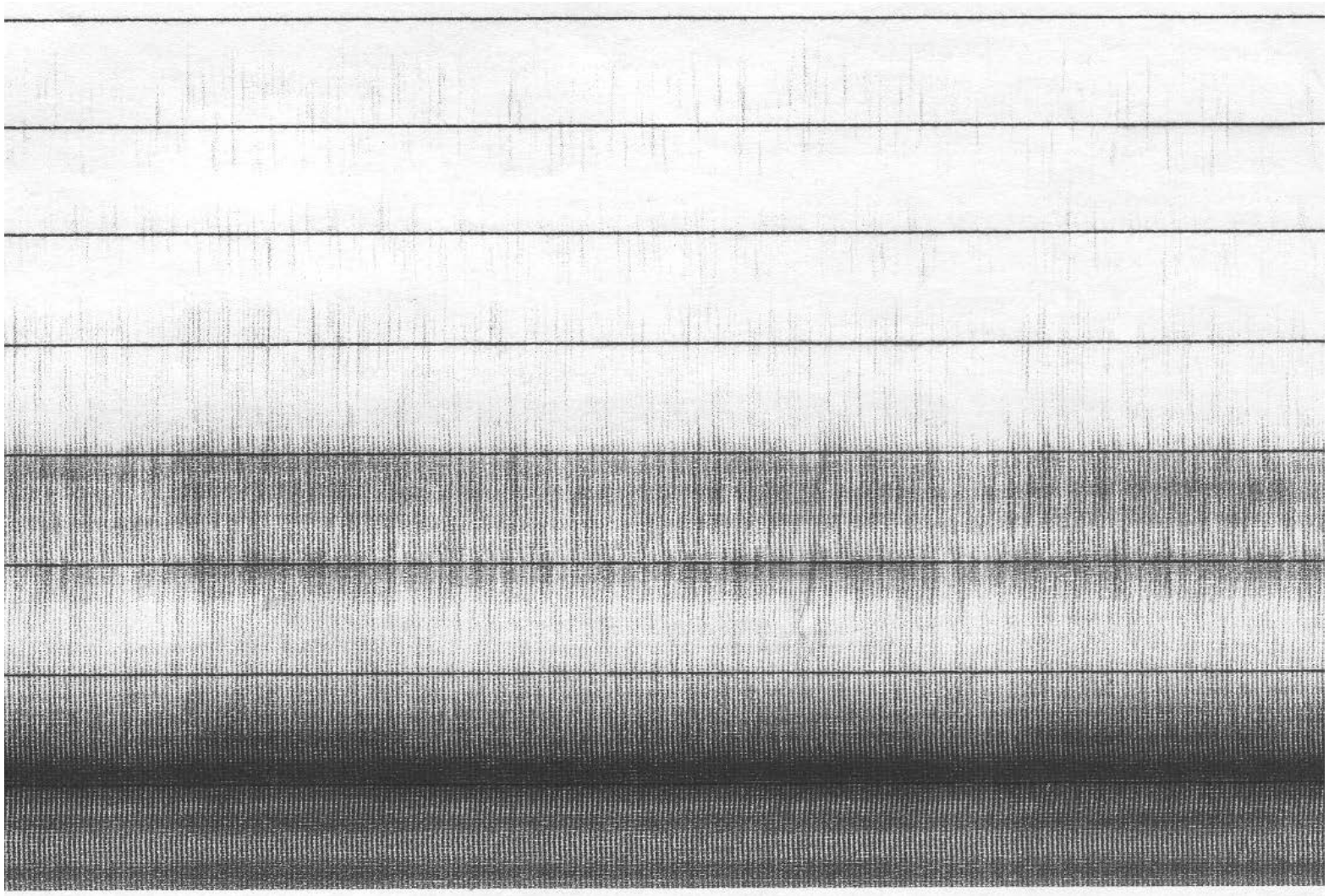


MDVP – dysphonia (Rt vocal nodule, 50 years female). (Lt) before voice therapy, (Rt) after voice therapy

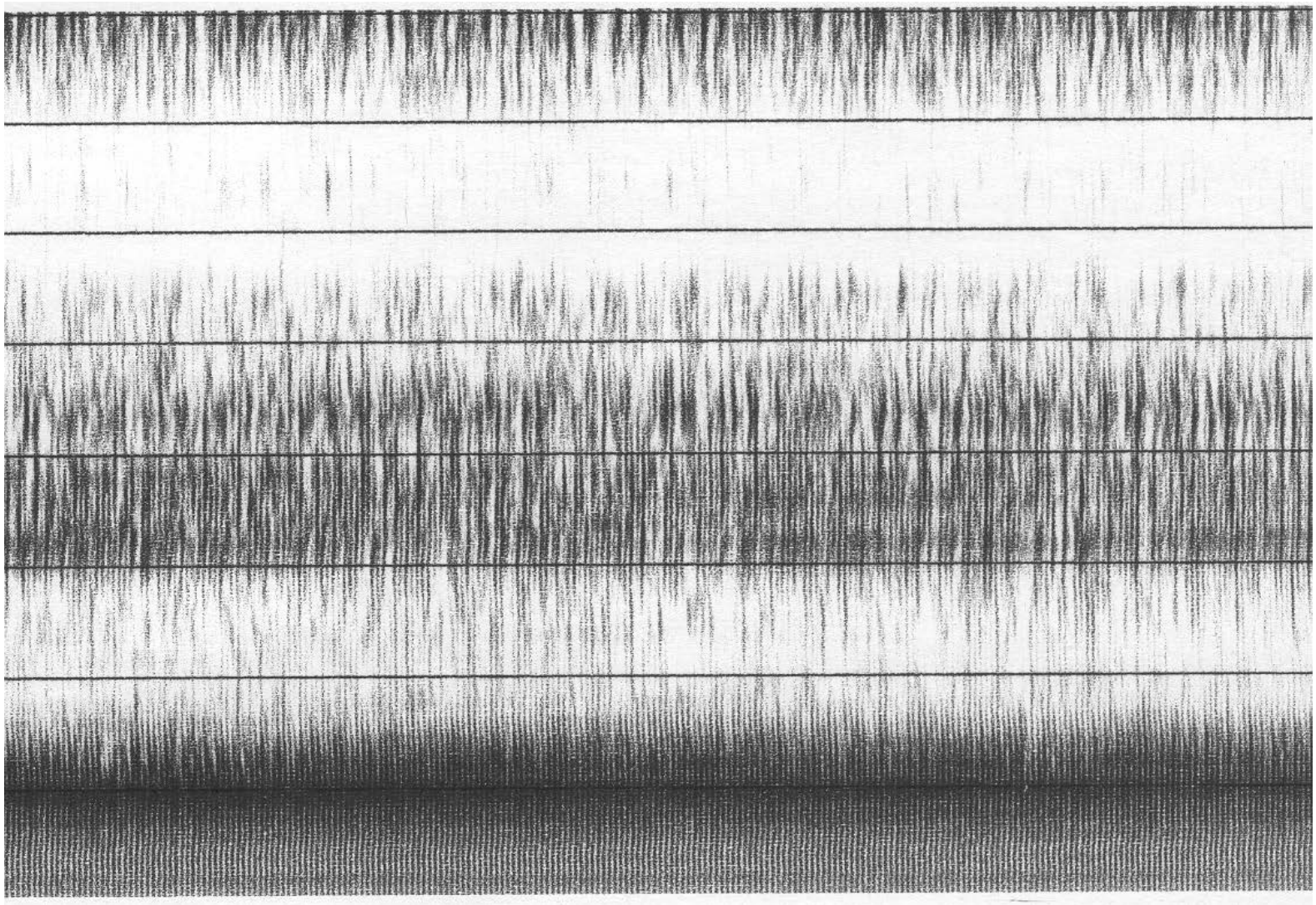




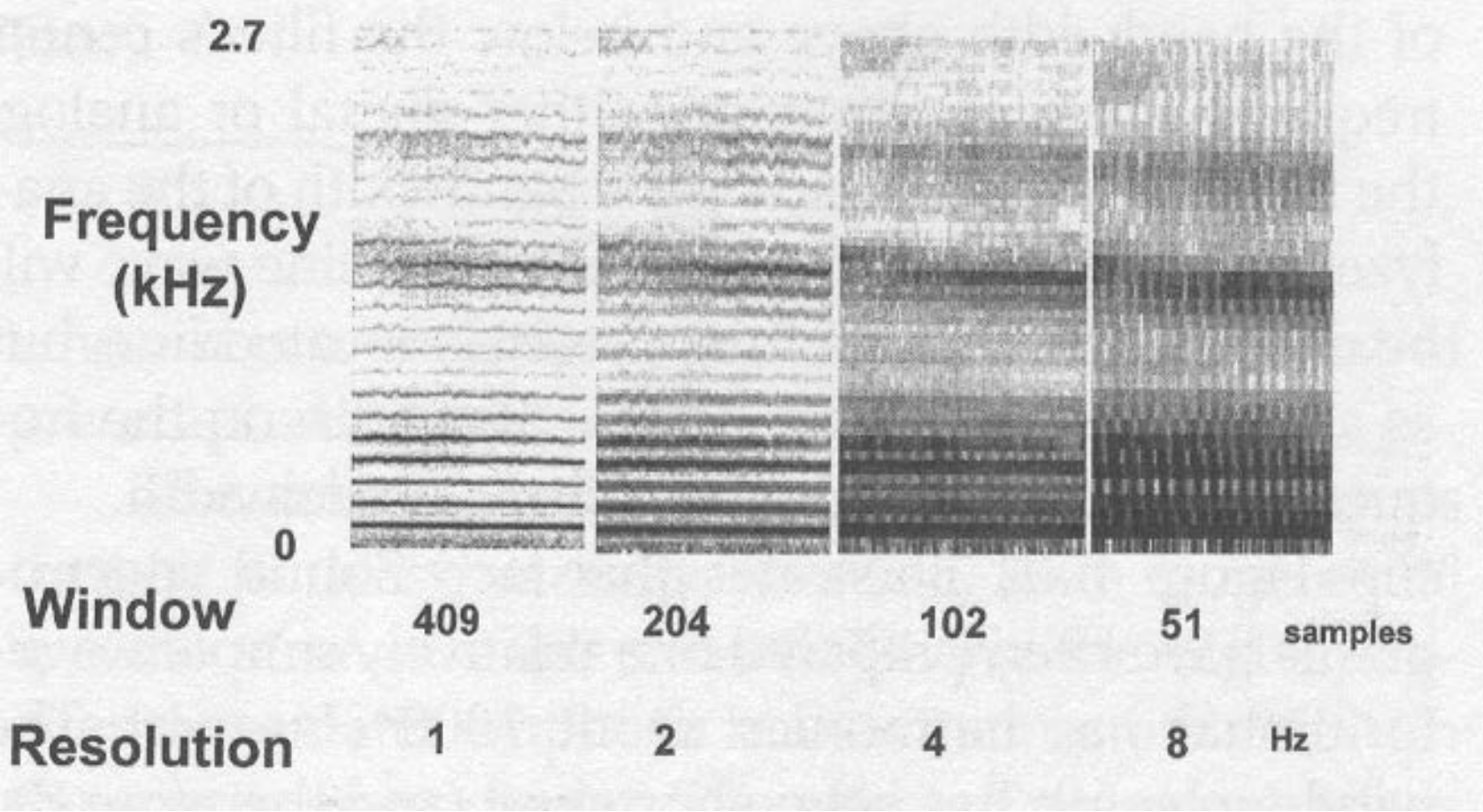
Sound spectrogram for an adult female during sustaining /ㄚ/



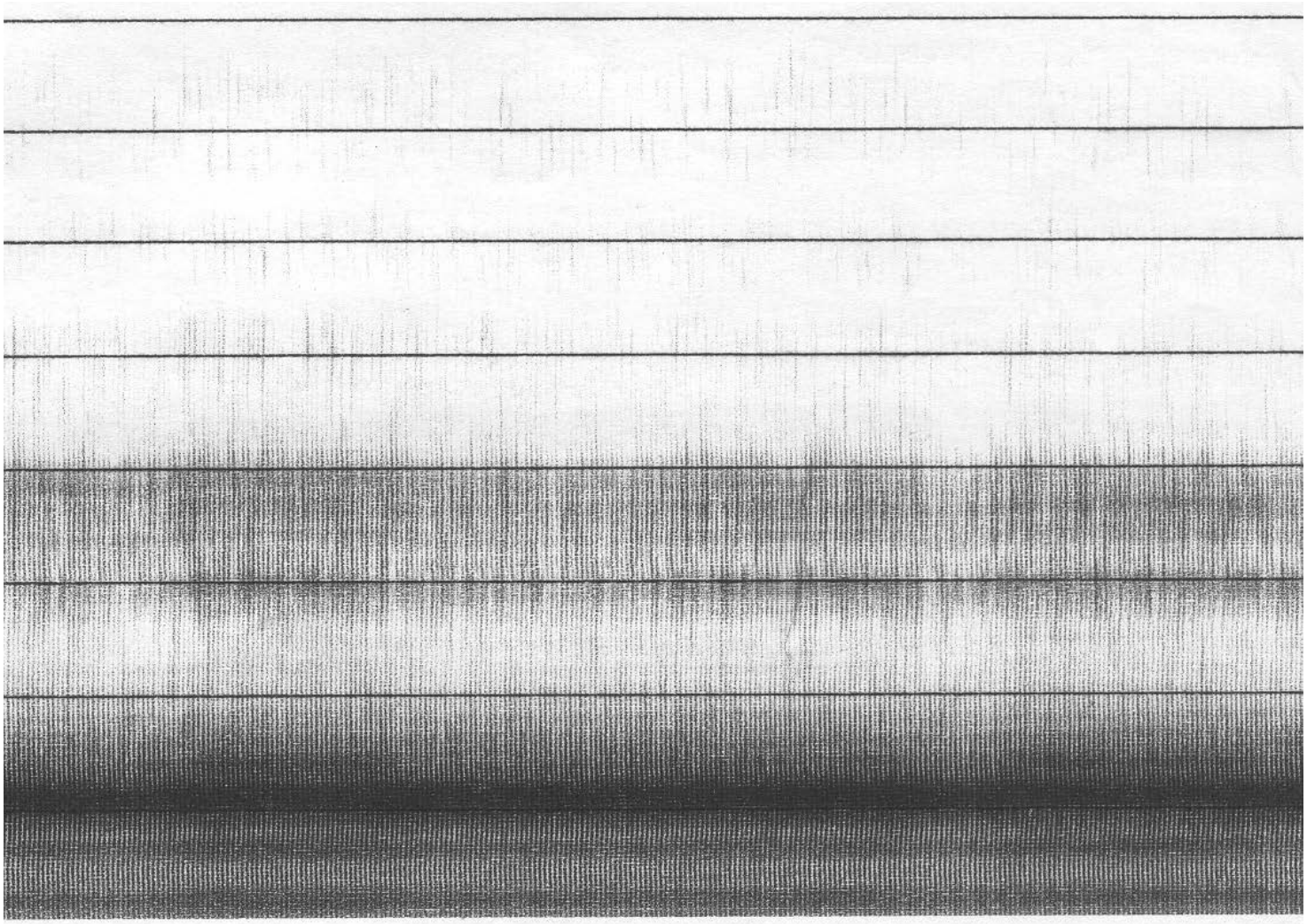
Sound spectrogram for an adult female of vocal nodules sustaining /ㄚ/



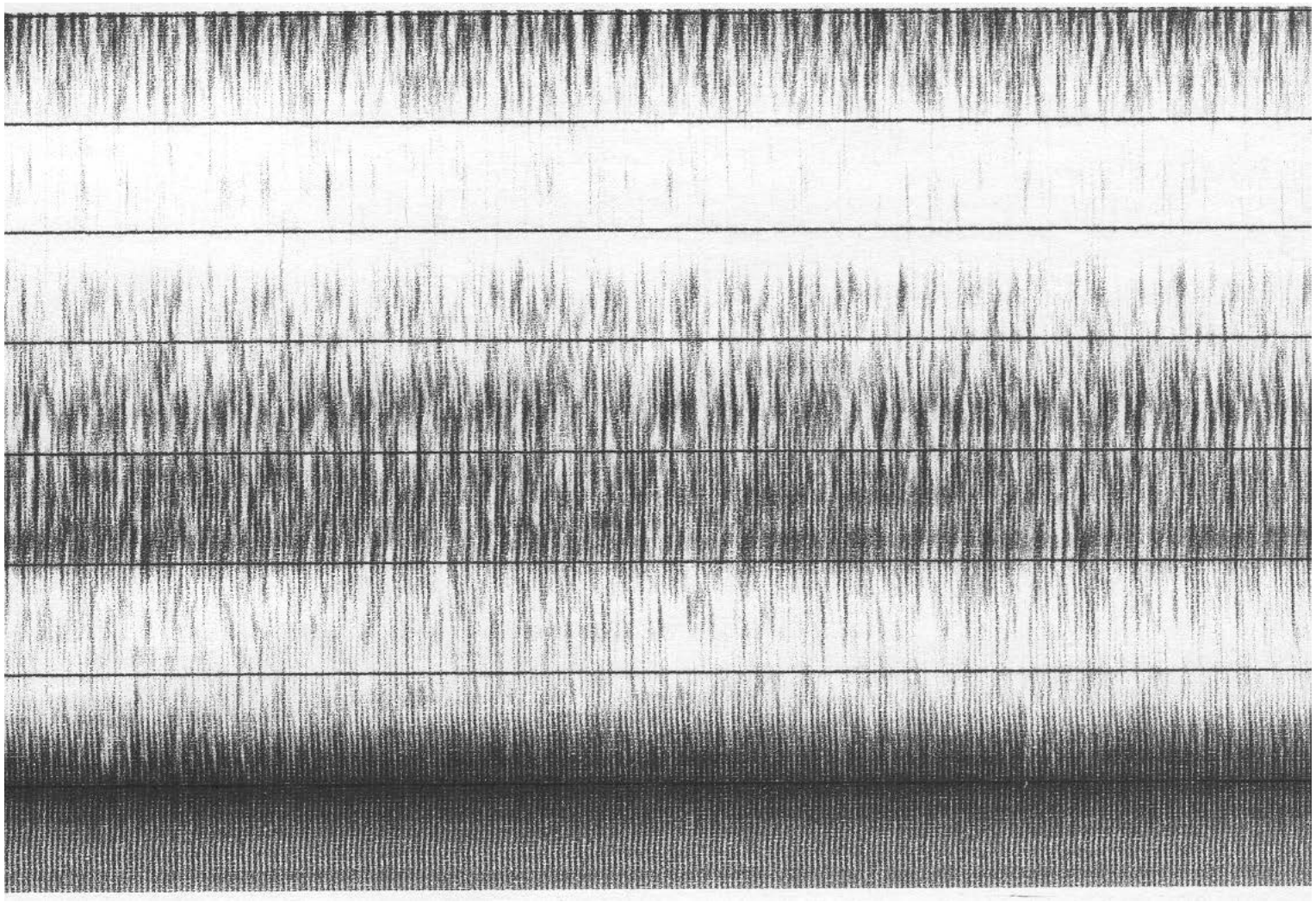
Four sound spectrograms of the same sustained vowel – As analysis window becomes smaller, the harmonic frequencies become wider



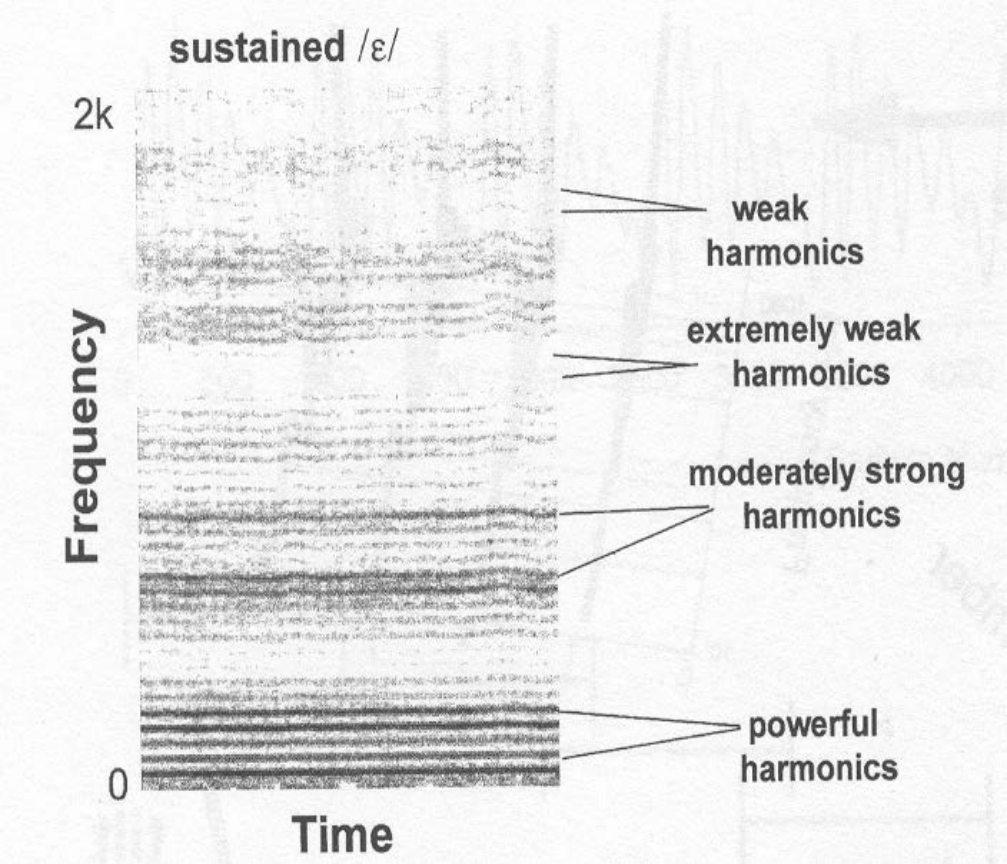
Sound spectrogram for an adult female during sustaining /ㄚ/

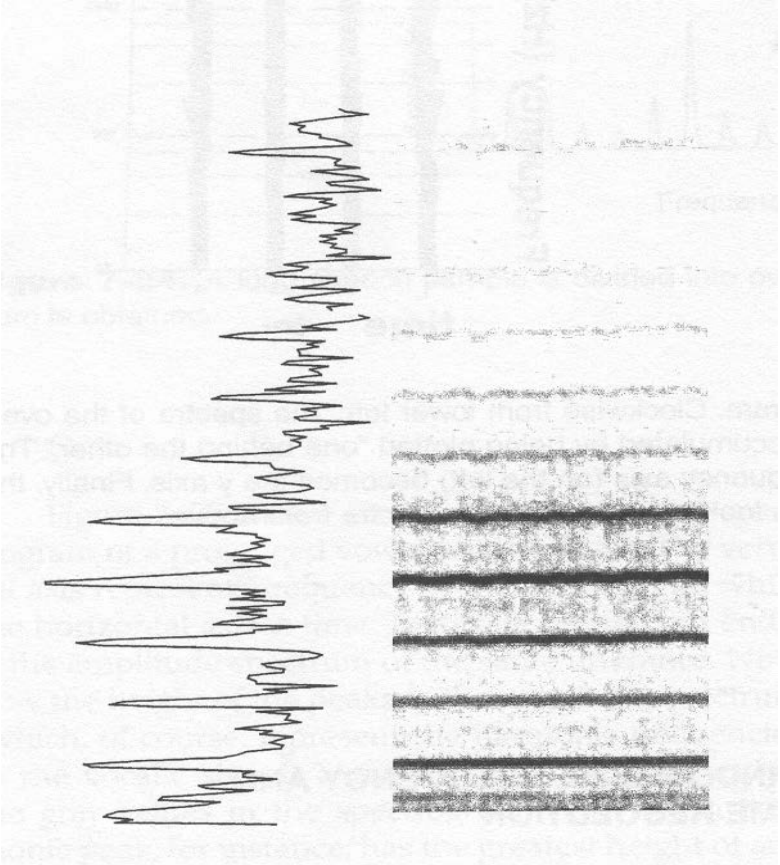


Sound spectrogram for an adult female of vocal nodules sustaining /ㄚ/

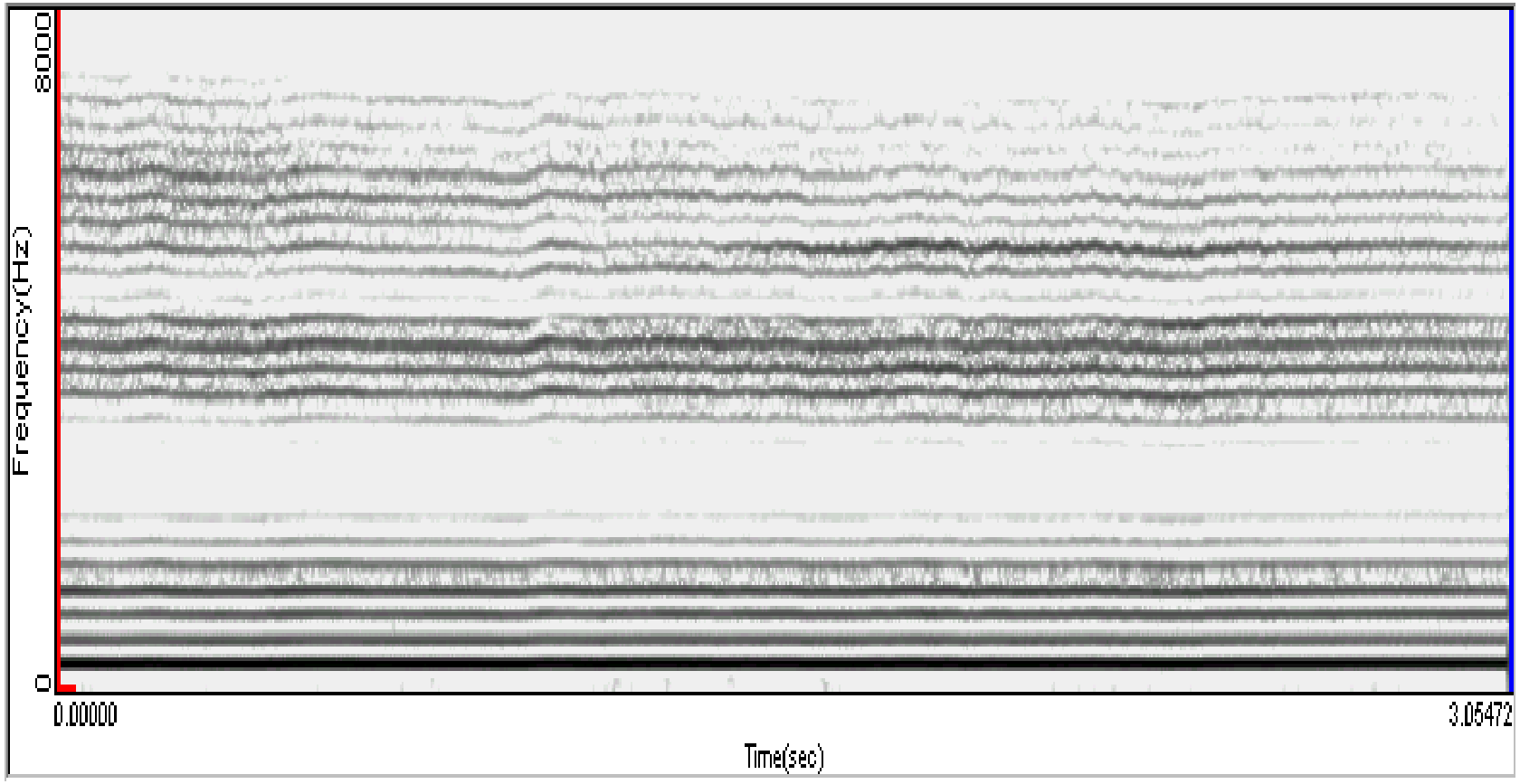


A 3-D sound spectrogram of a sustained vowel /ɛ/

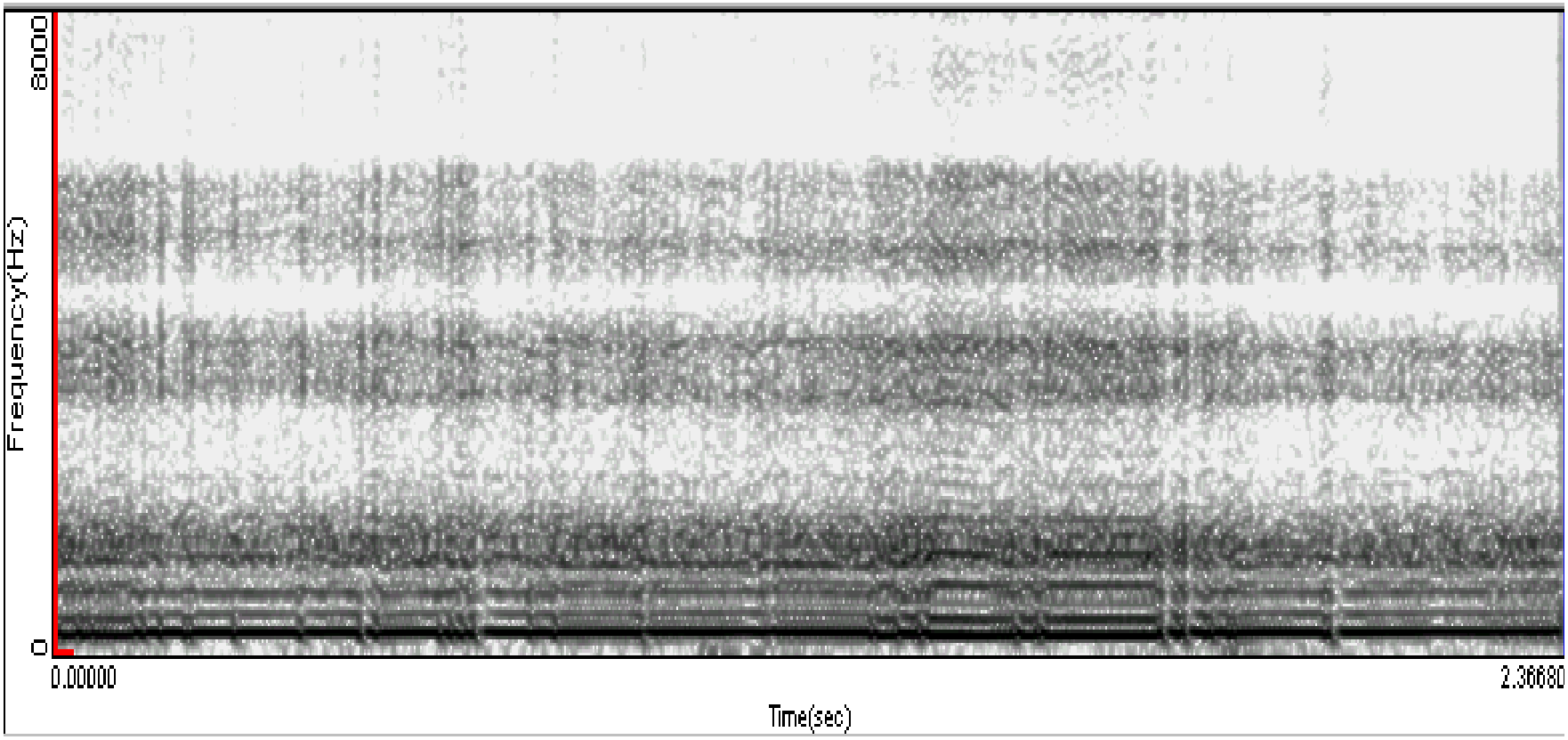




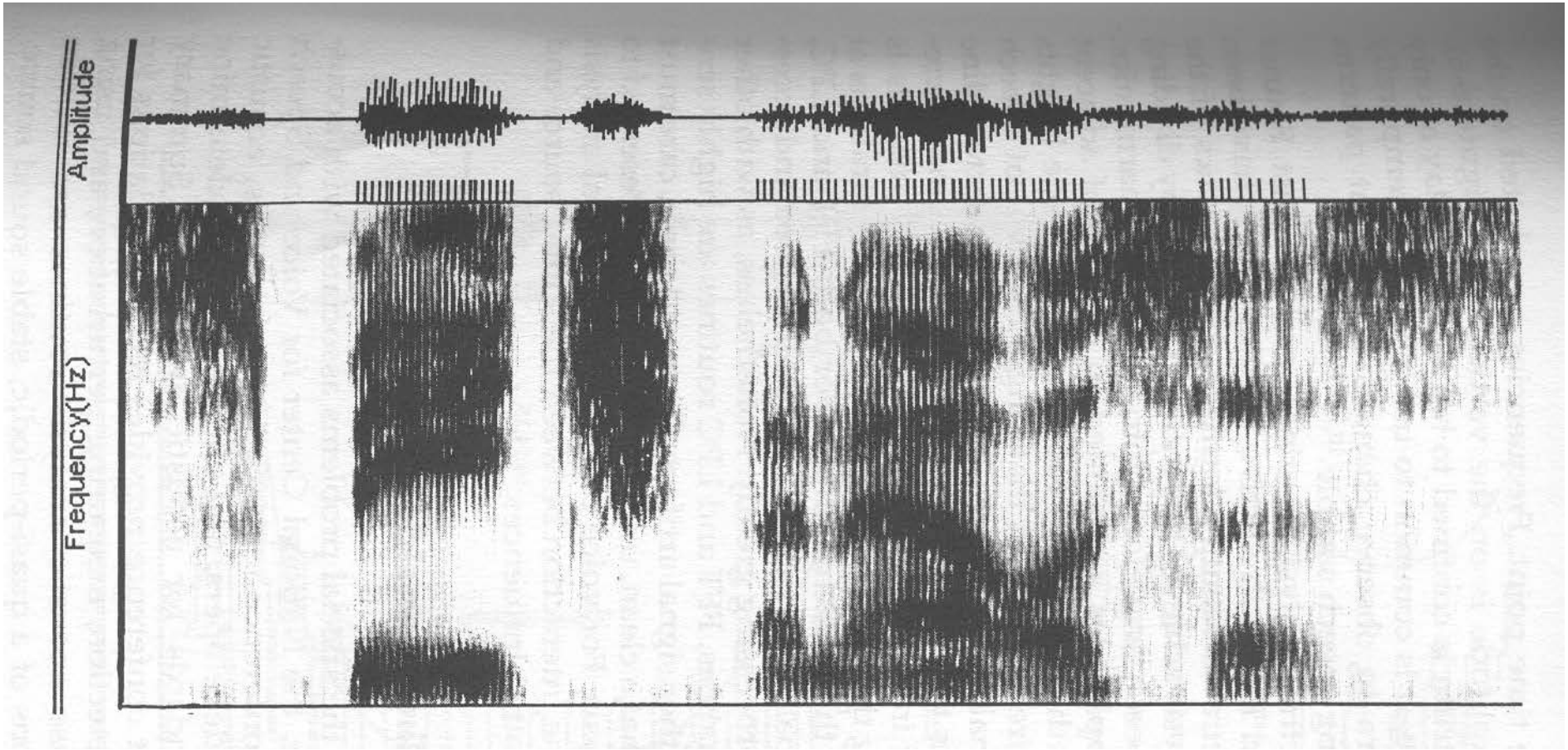
Sound spectrogram (narrowband) for an 29 years female of normal voice sustaining /Y/



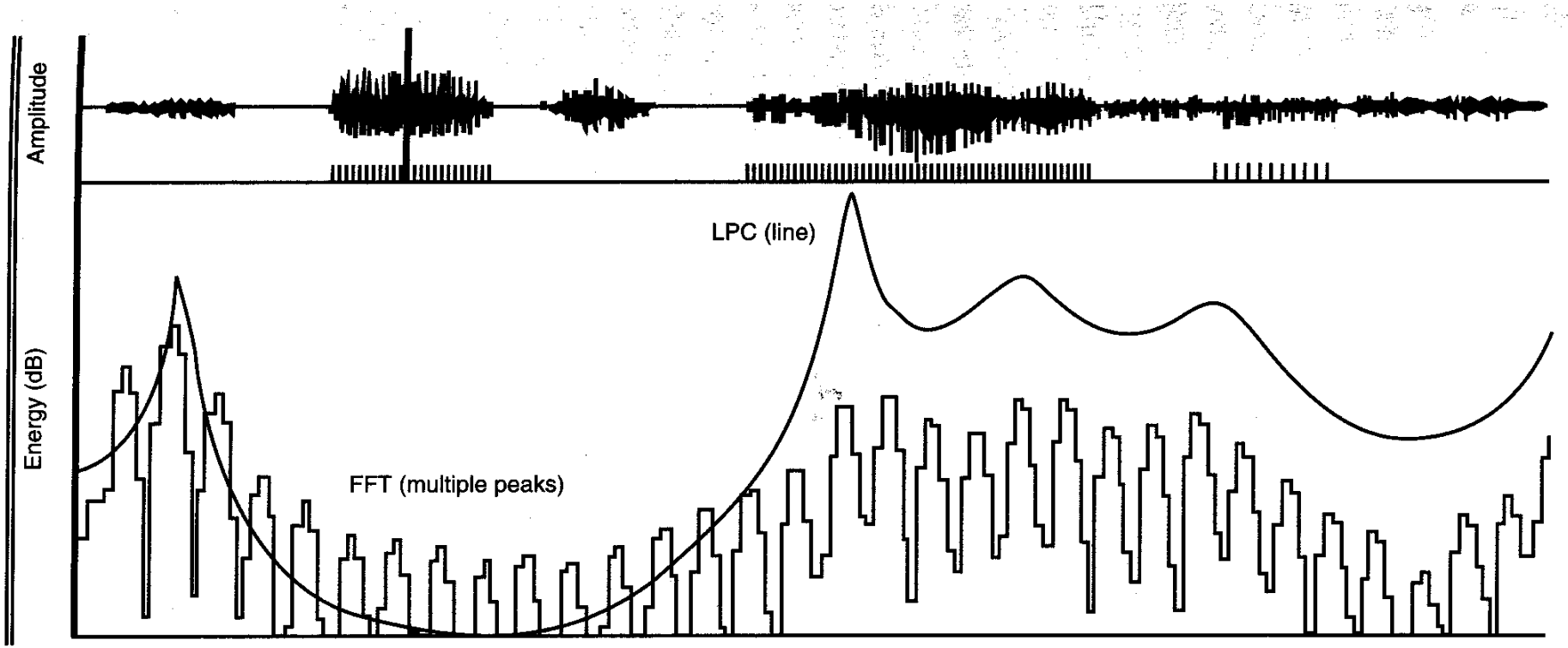
Sound spectrogram (narrowband) for an 27 years female of vocal nodules sustaining /Y/



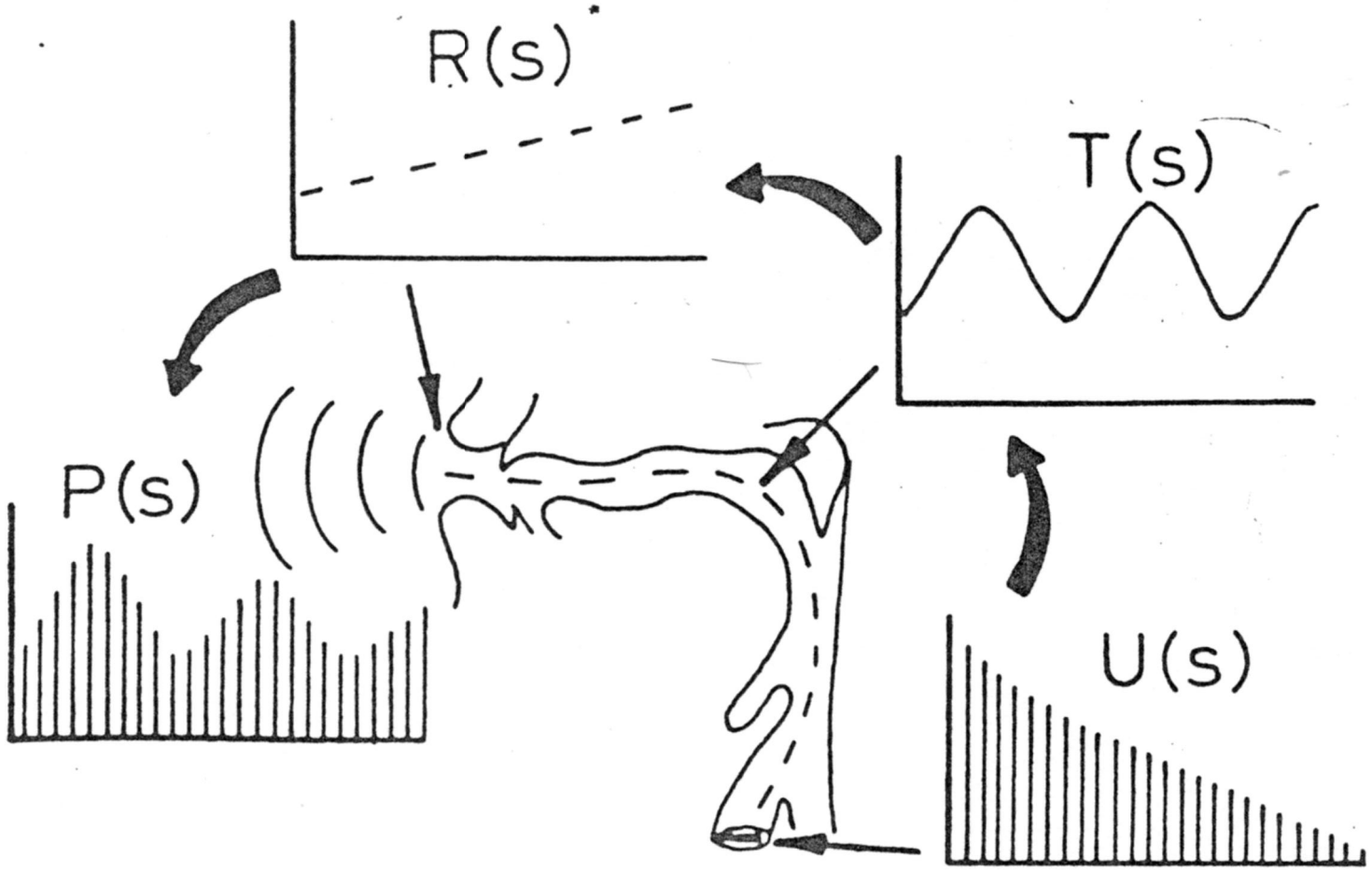
Wide band spectrogram – the formant concentrations produced during the vowel segments



Same acoustic waveform above with a line spectrum - LPC and FFT fromant tracing from the /—/

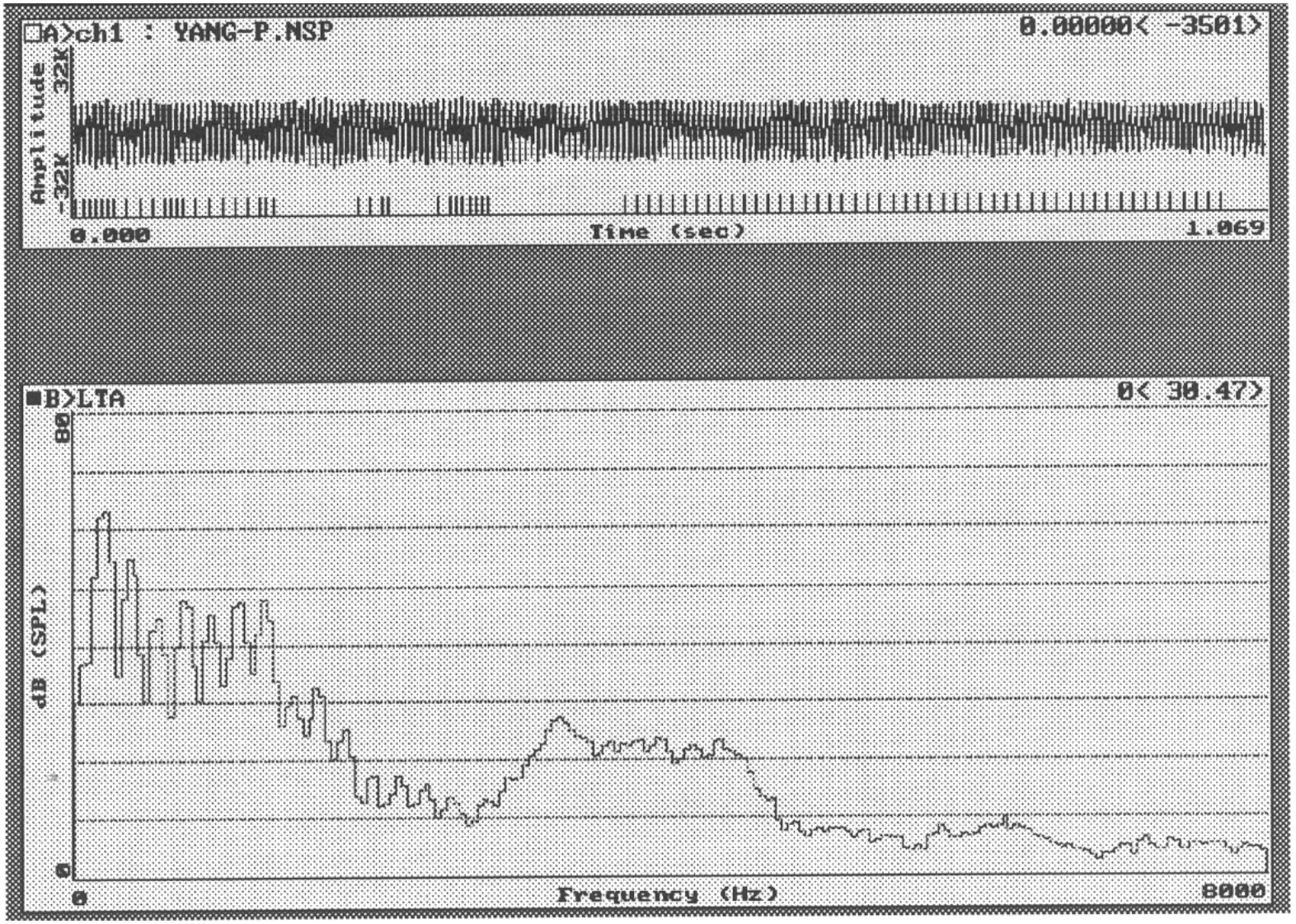


Source-filter concept for vowels. U(s), laryngeal source spectrum; T(s), vocal tract transfer function; R(s), radiation; P(s), output spectrum

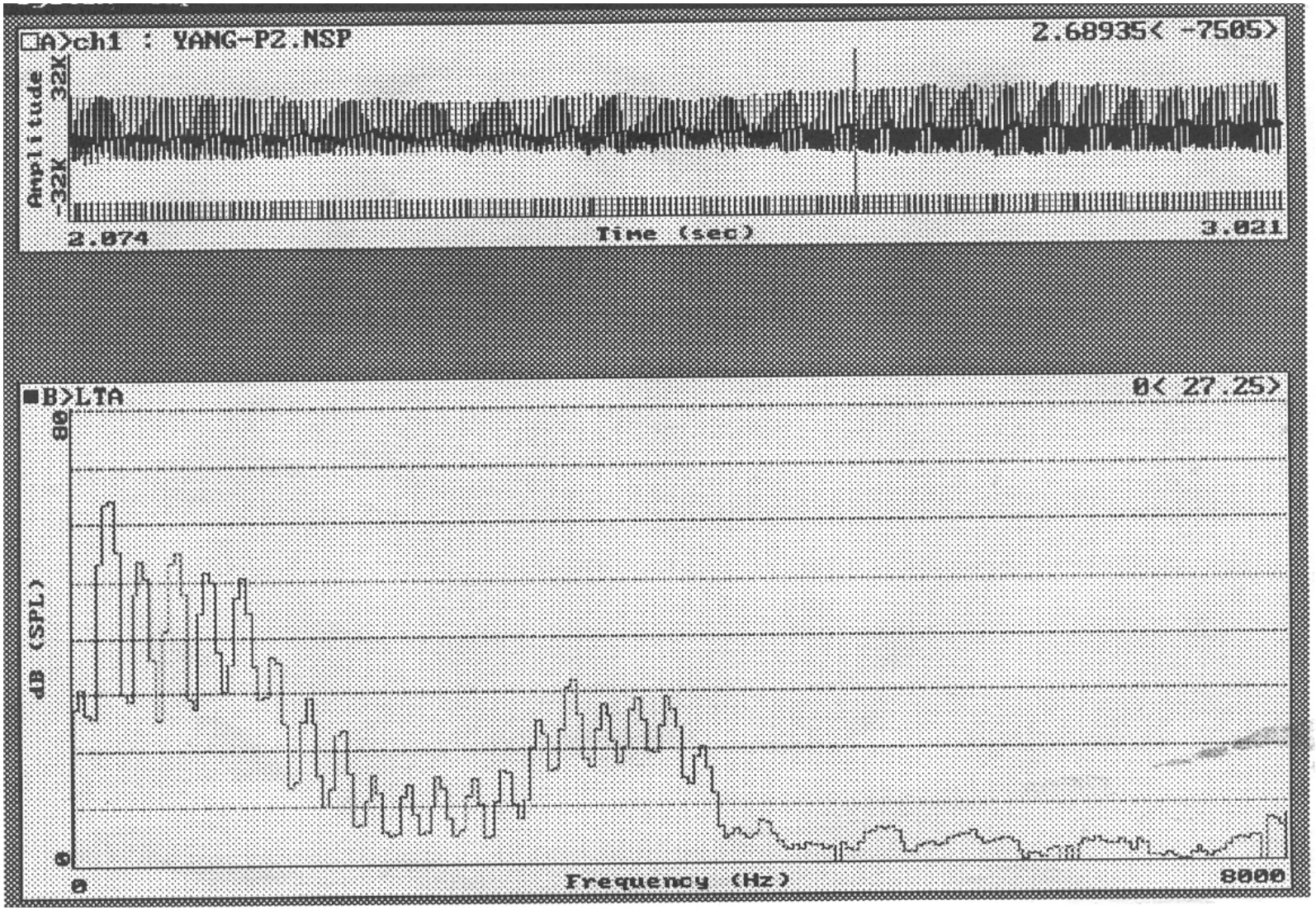


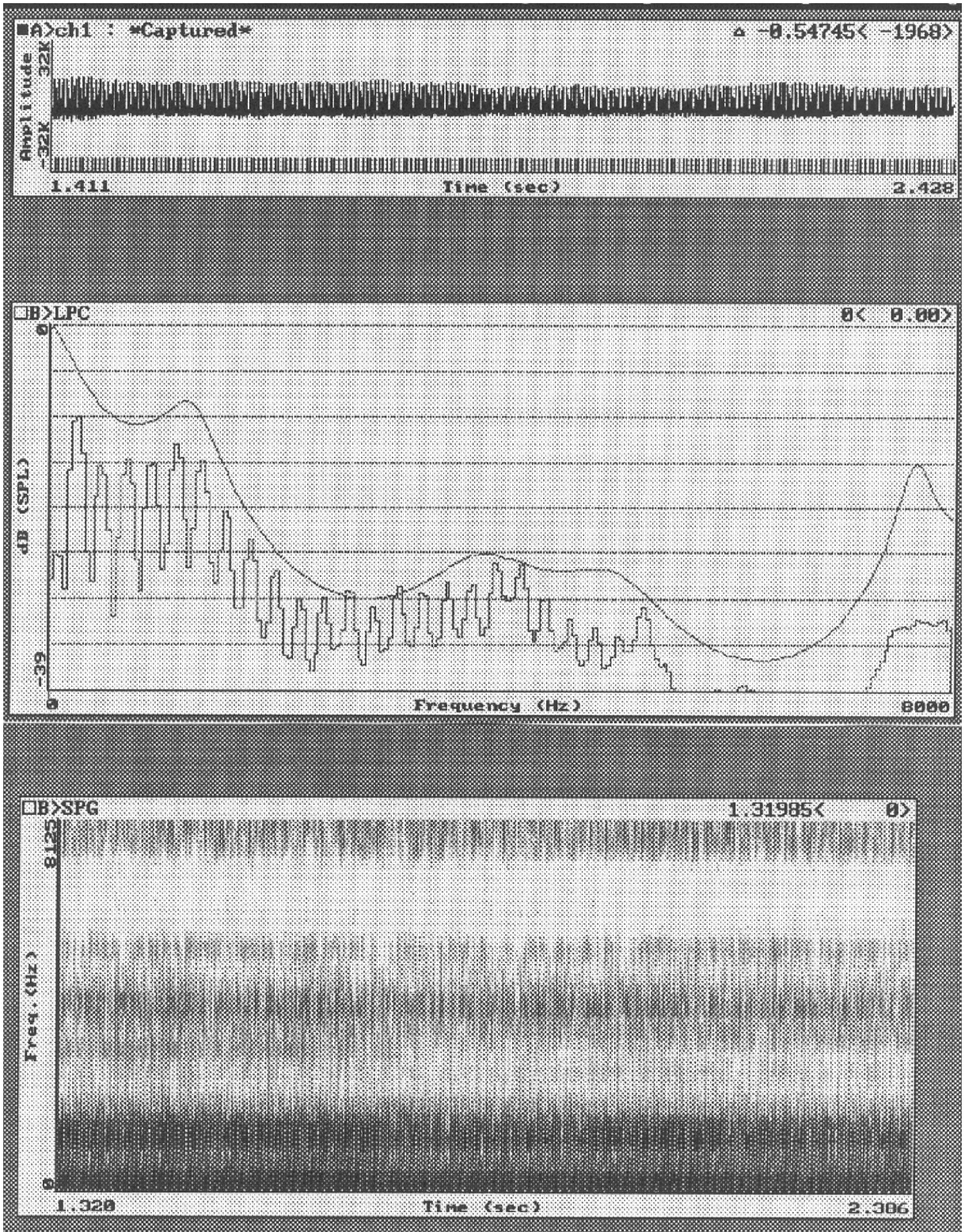
$$P(s) = U(s)\ T(s)\ R(s)$$

Sound waveform & power spectrum for a 46-year female of vocal nodule with muscular tension dysphonia before voice therapy



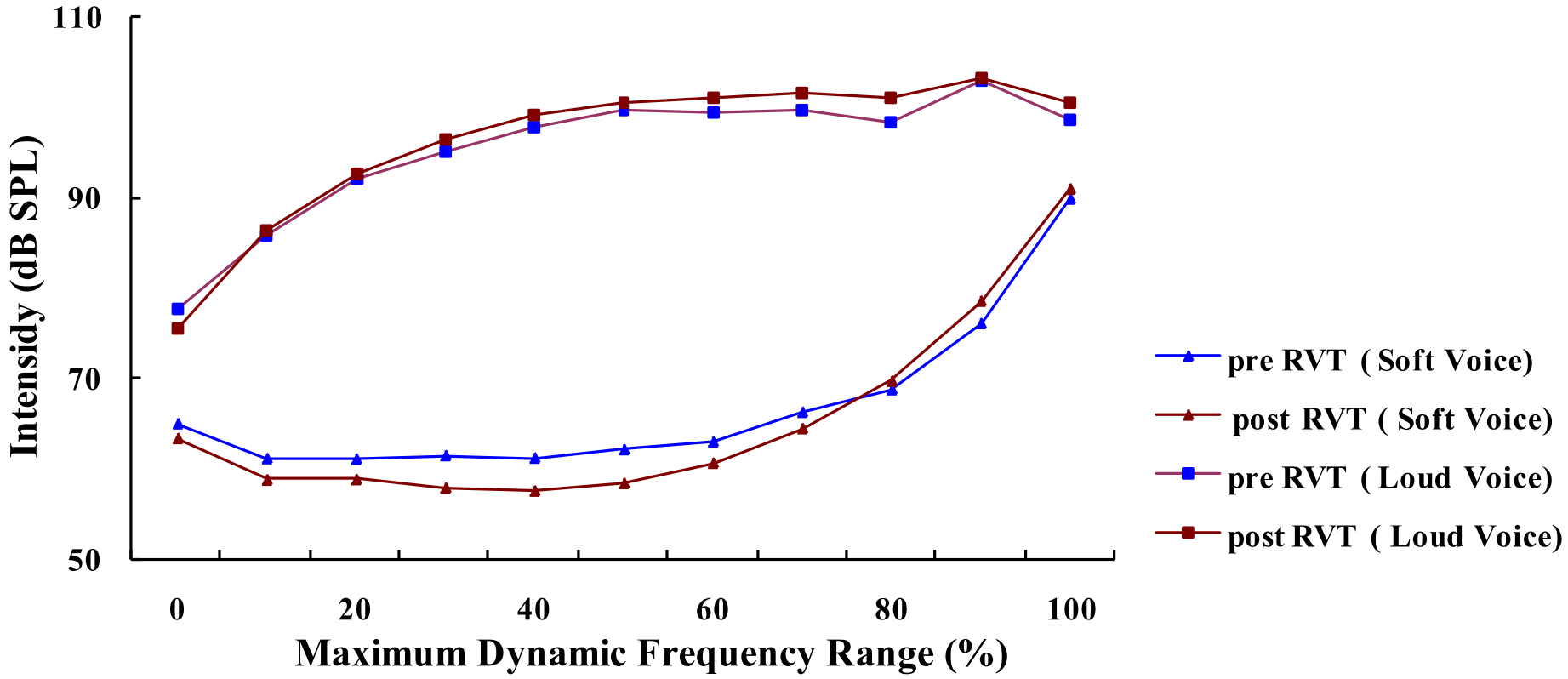
Sound waveform & power spectrum for a 46-year female of vocal nodule with muscular tension dysphonia after voice therapy





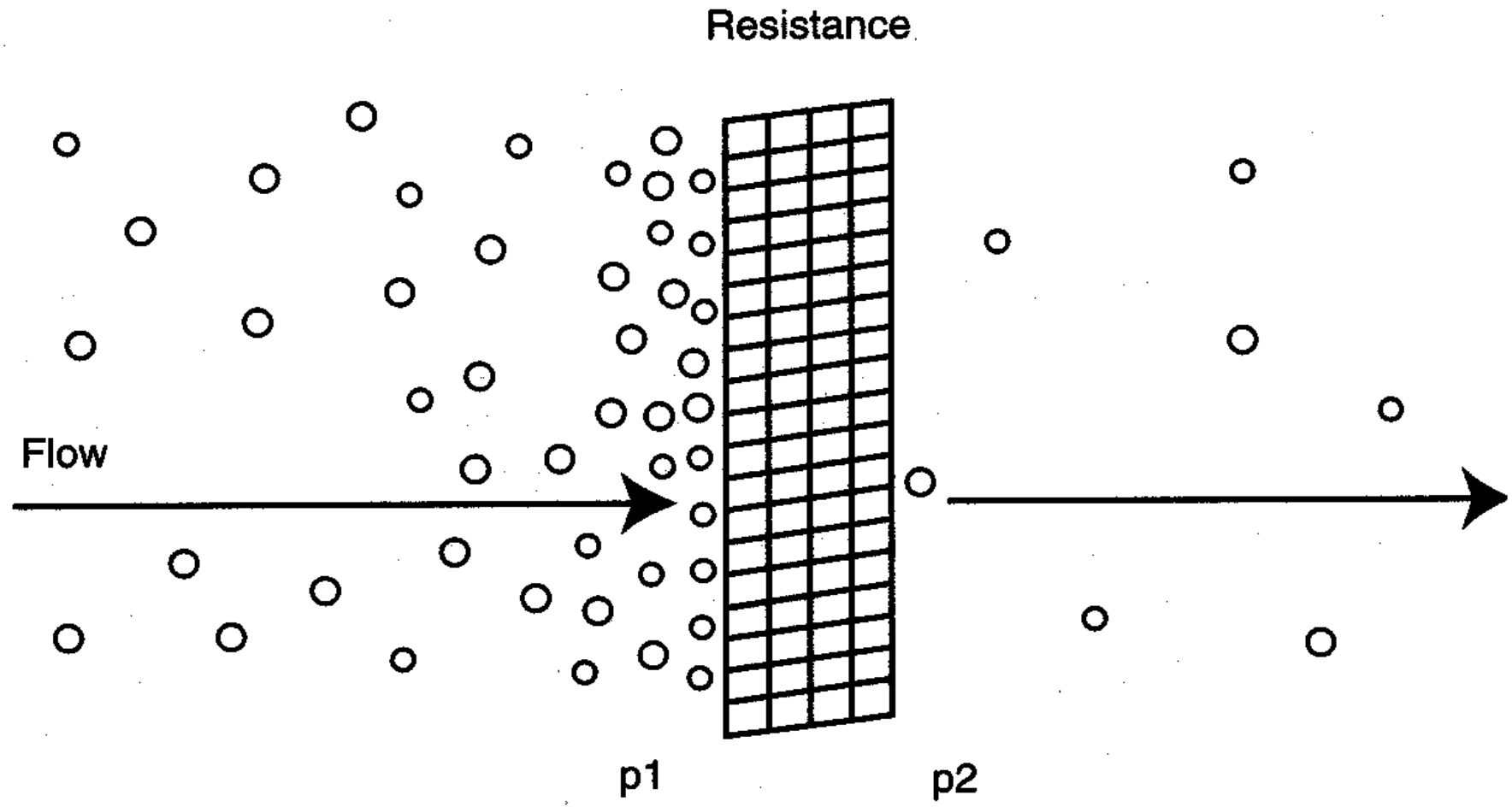
Sound wave, FFT, LPC & sound spectrogram for a 24-year normal female sustaining vowel /ㄚ/

Phonetogram before and after Resonant Voice Therapy



Instrumentation for intraoral pressure & airflow measurement

Flow, resistance and differential pressure – As flow passes through a known resistance, it creates a pressure change (p1 vs p2)



(A) A screen pneumotachograph & a heater control, (B) a exploded diagram

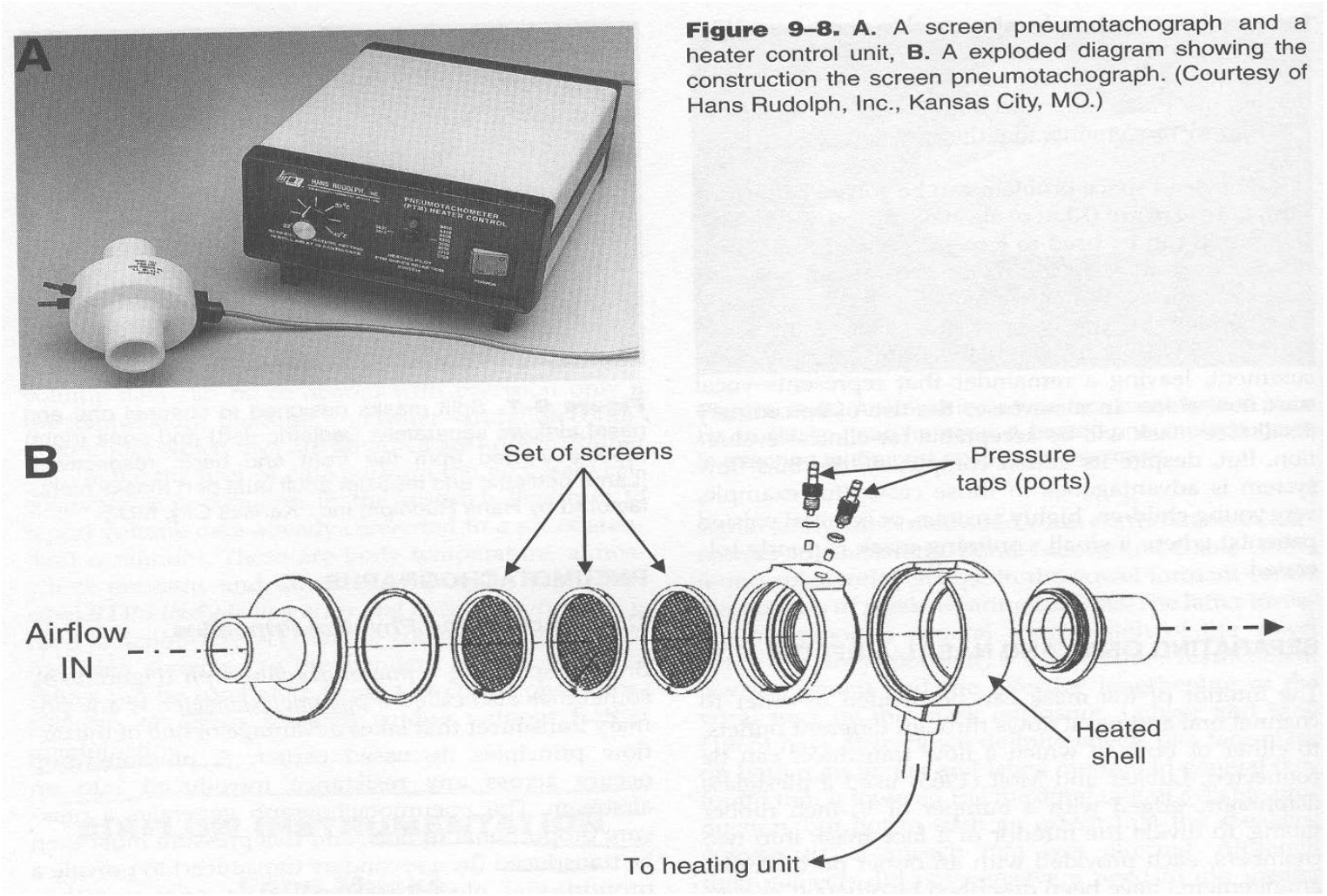
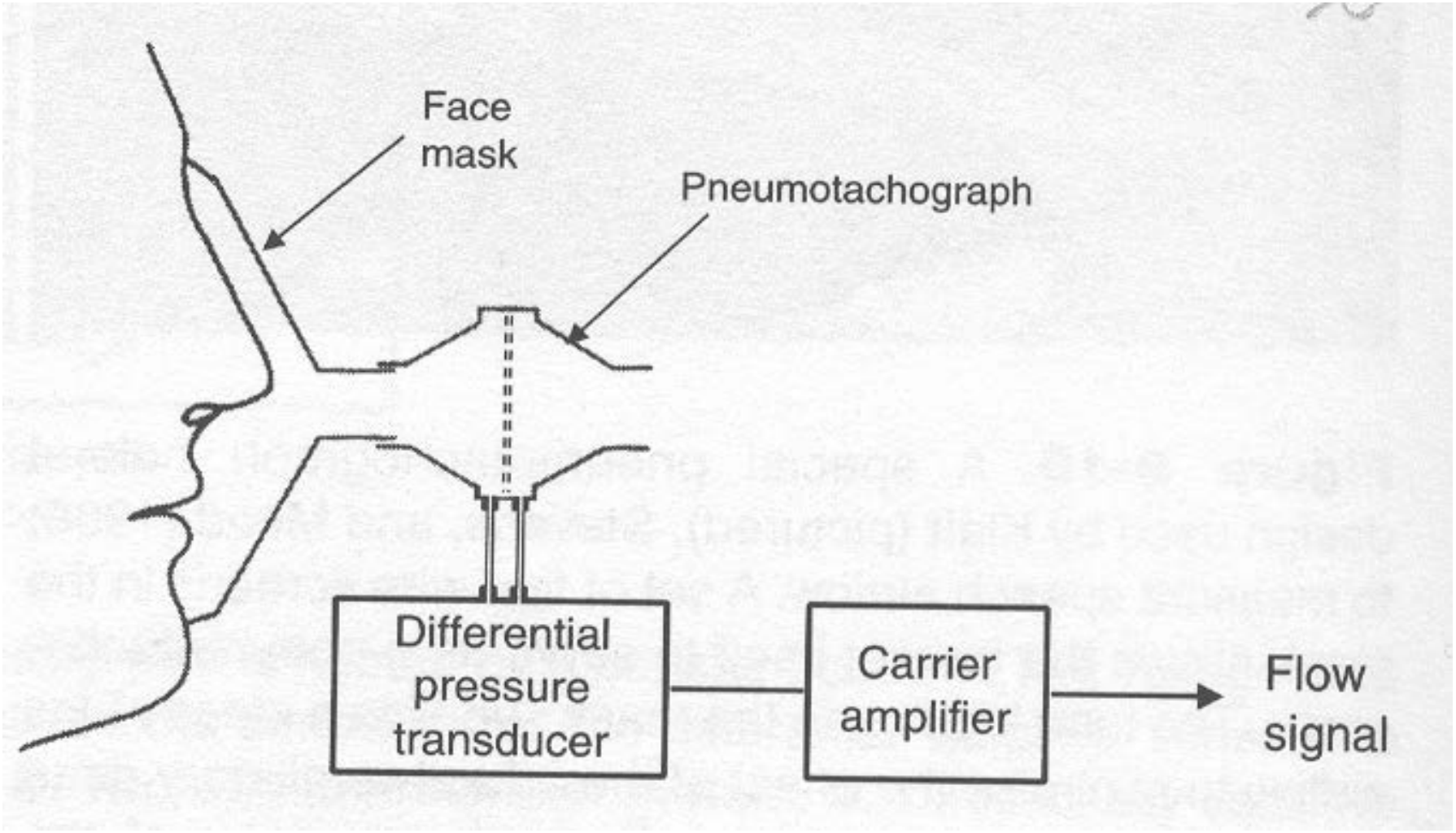


Figure 9–8. A. A screen pneumotachograph and a heater control unit, **B.** A exploded diagram showing the construction the screen pneumotachograph. (Courtesy of Hans Rudolph, Inc., Kansas City, MO.)

Block diagram of a pneumotachograph system



Air-Flow Measurement System

Kay Elemetrics is proud to introduce the Aerophone II, model 6800, a complete system for measuring air-flow and air pressure parameters. Designed for voice labs, ENT clinics or phonetics labs, the Aerophone II brings powerful air-flow measurement techniques to the PC environment. Aerophone II was jointly developed by Kay Elemetrics and FJ Electronics (Denmark).

▲ *The Aerophone comes complete with instruction manual, software, transducer module, face masks and disposable tubes.*

▲ *Aerophone produces real-time graphic traces of air-flow and air pressure parameters.*

- PC computer-based phonation analyzer
- Lightweight and portable with carrying case
- Running speech, sustained vocalization and respiratory functions
- Air-flow, air pressure and SPL measurements
- Over 22 voice/speech calculations displayed, graphed and stored

The Aerophone II consists of both hardware and software. The hardware consists of a hand-held transducer module which gathers information about air-flow, air pressure and sound pressure levels.

Different size masks are provided for running speech and disposable tubes are used for sustained vocalizations.

The software, MS DOS® compatible, displays and prints graphical and numerical analysis of peak-flow, vital capacity, duration, phonation quotient, mean air-flow rate, loudest tone level, mean tone level, softest tone level, sound pressure level, ab-adduction rate, subglottal air pressure, glottal power, intraoral pressure, glottal efficiency and glottal resistance.

The software is both powerful and easy-to-use with color graphic traces and statistical screens. Printouts can be generated on any PC printer (e.g., laser printers, dot matrix, etc.).

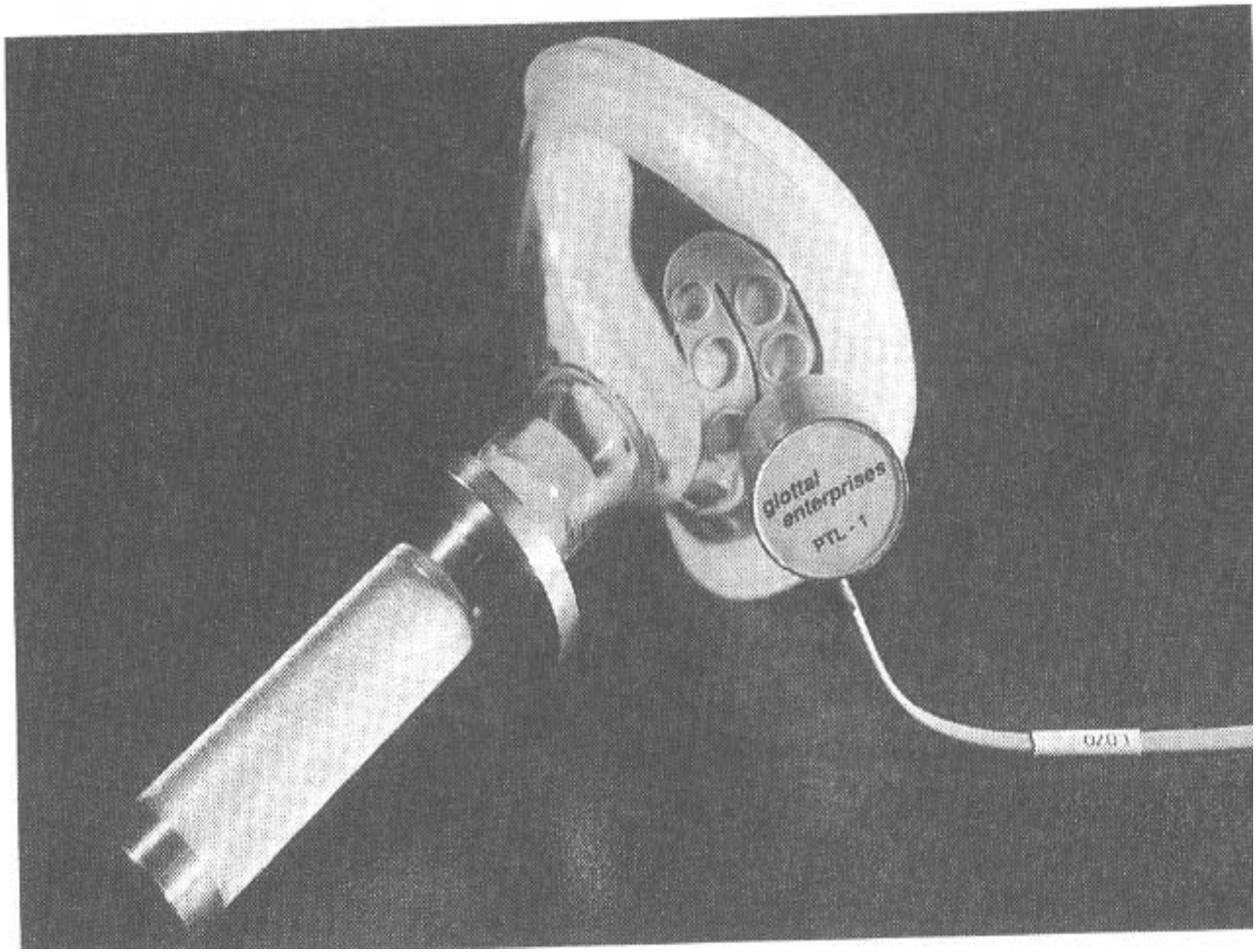
For more information contact:

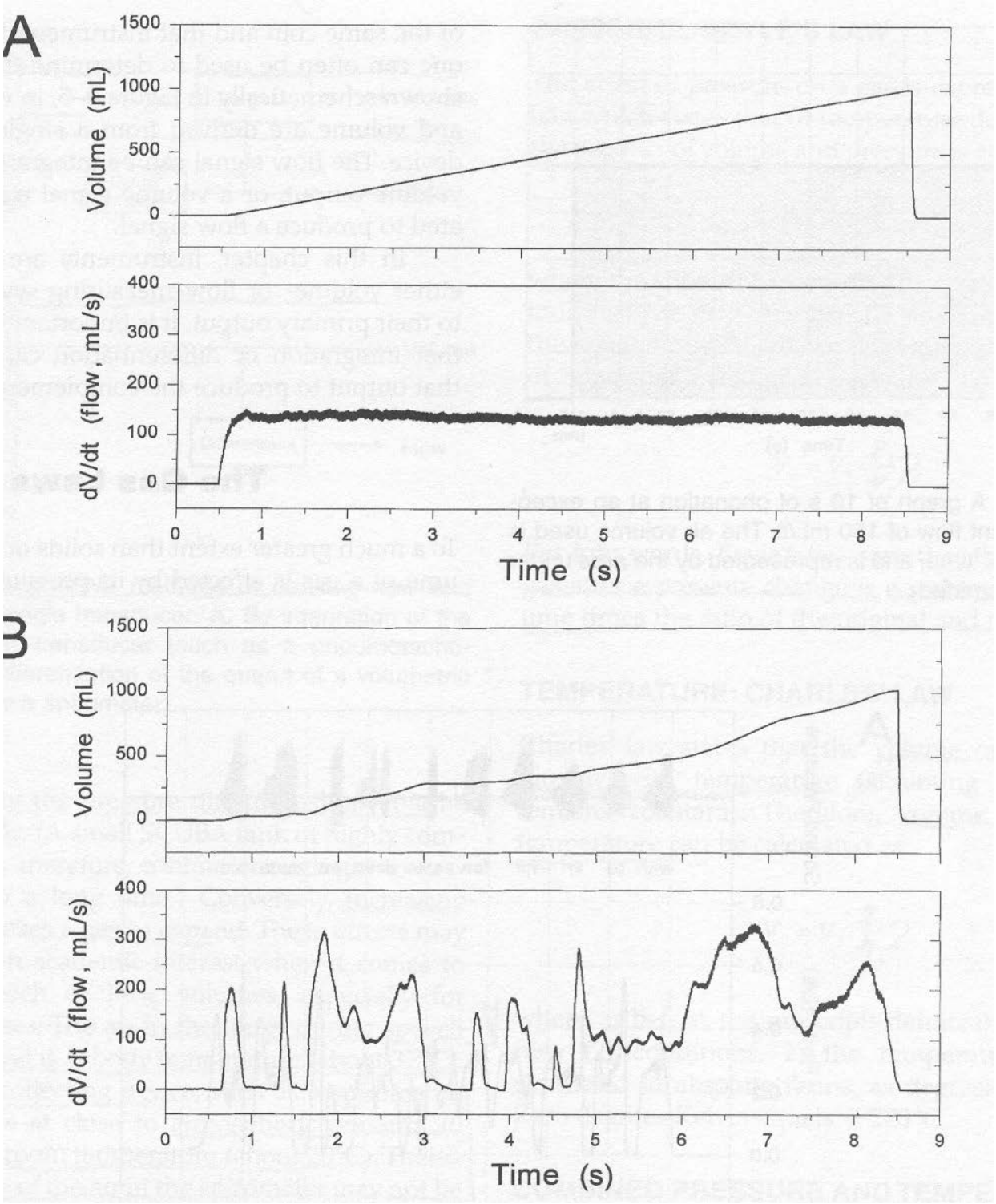
KAY

Kay Elemetrics Corp
12 Maple Avenue, P.O. Box 2025
Pine Brook, NJ 07058-2025
Toll-Free Tel: 1-800-289-5297
Tel: (201) 227-2000
FAX: (201) 227-7760
TWX: 710-734-4347

Instrumentation for intraoral pressure & airflow measurement

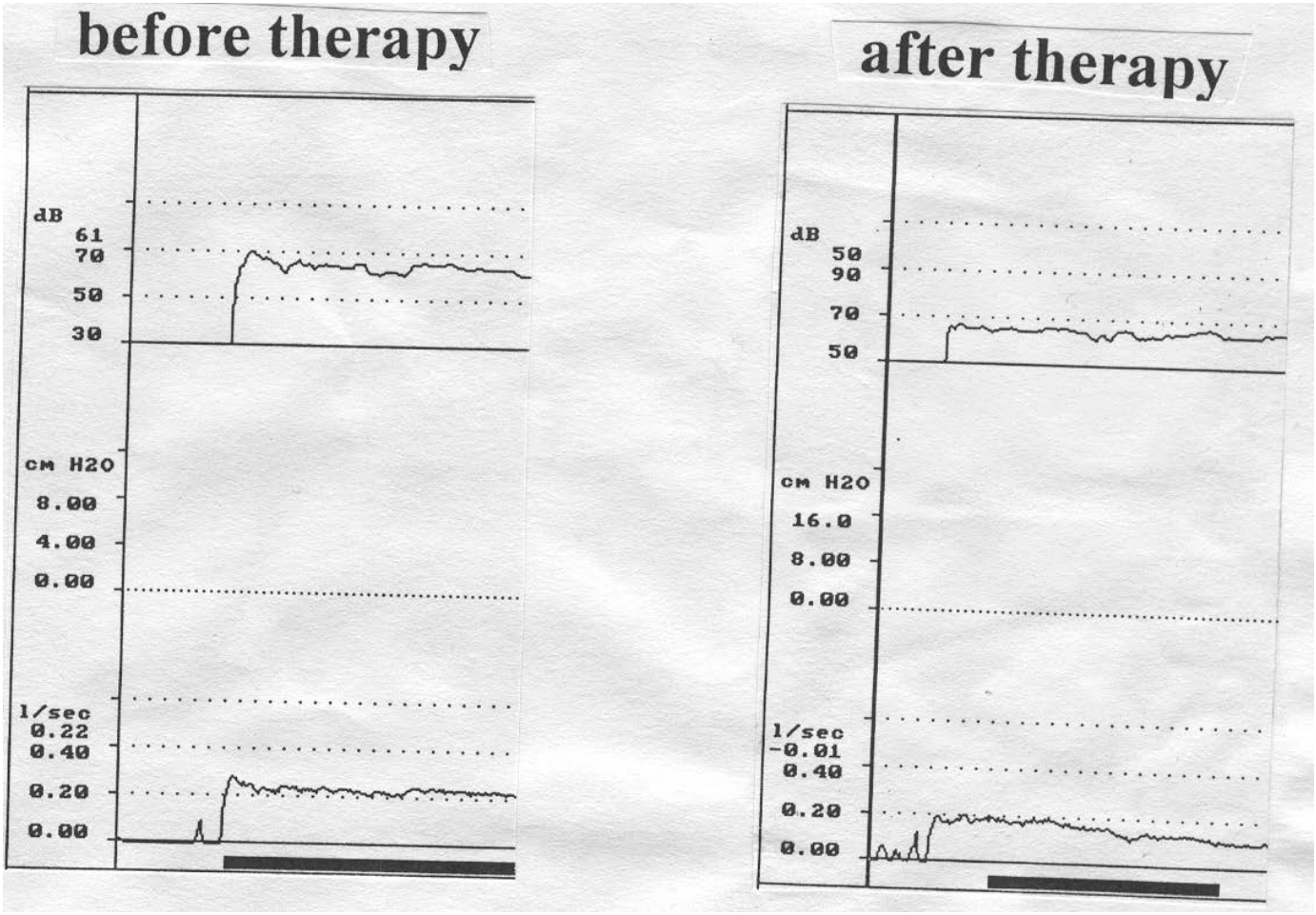
A circumferentially vented pneumotachograph (Rosenberg) mask - a primary flow transducer (Rothenberg, 1973)

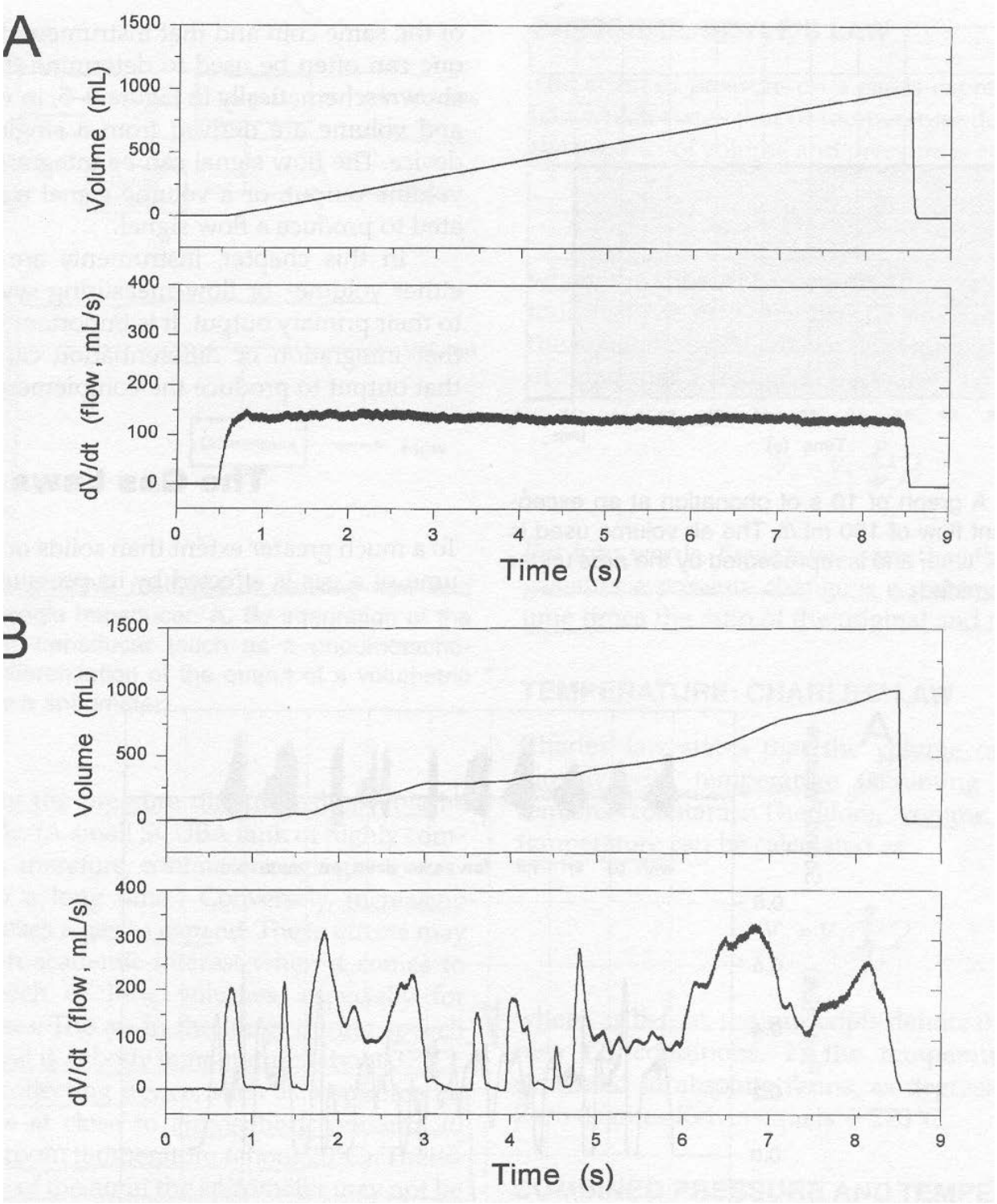




Airflow rate and volume measurements. (A) 1 liter of air expired over 8 second. (B) the trace indicating the derivative of volume

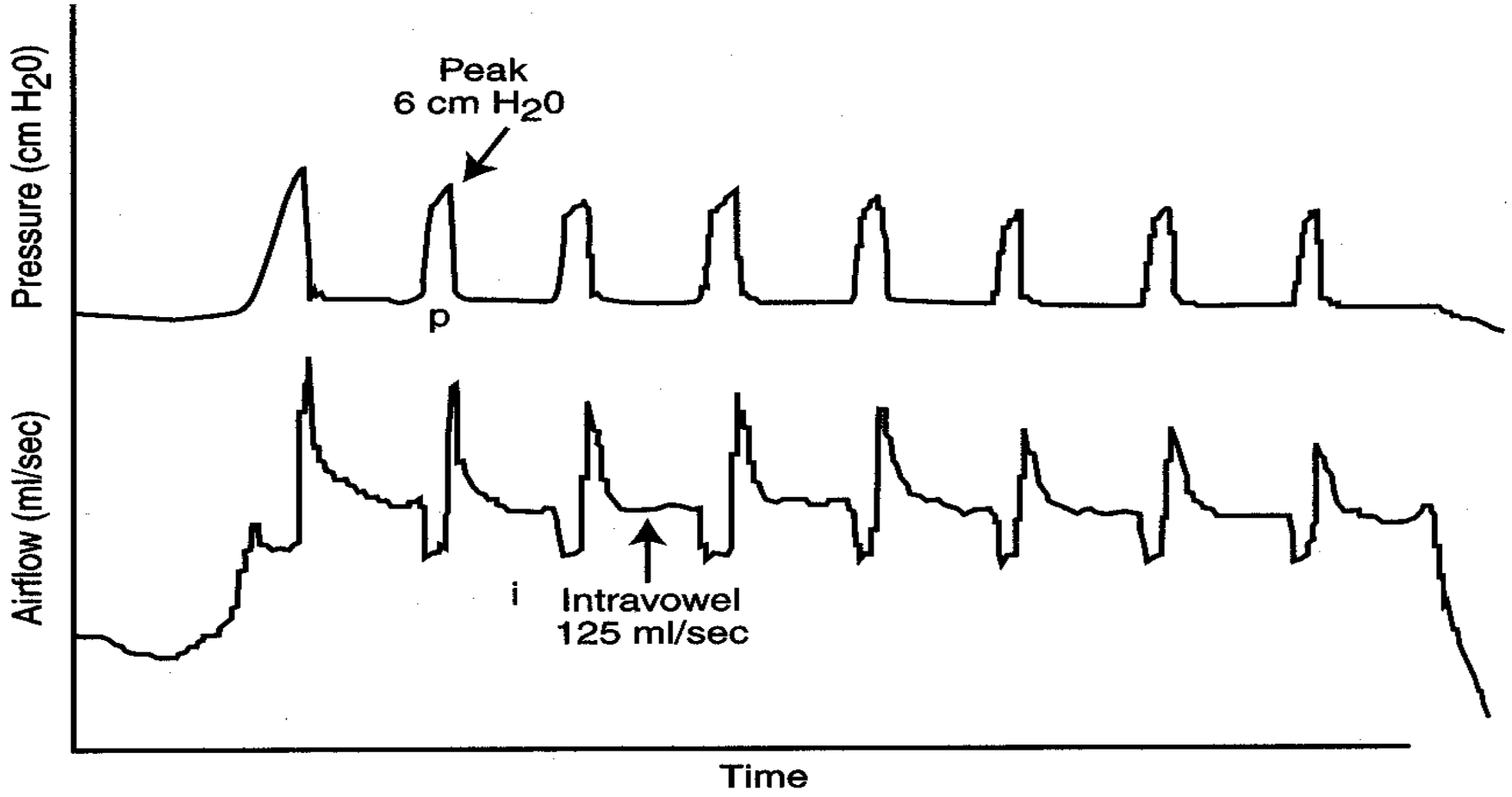
Mean airflow rate for a 46-year female of vocal nodule with muscular tension dysphonia before & after voice therapy



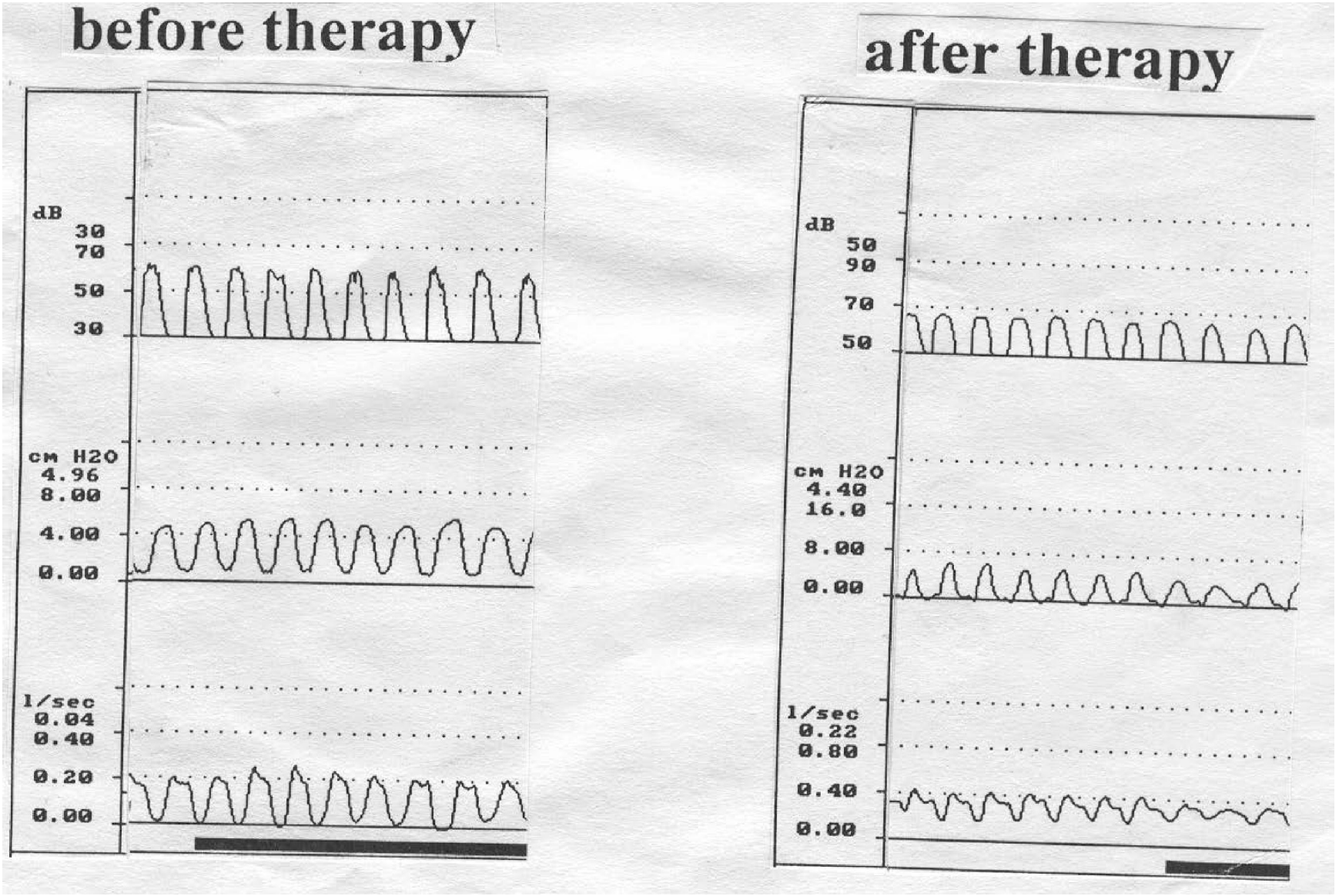


Airflow rate and volume measurements. (A) 1 liter of air expired over 8 second. (B) the trace indicating the derivative of volume

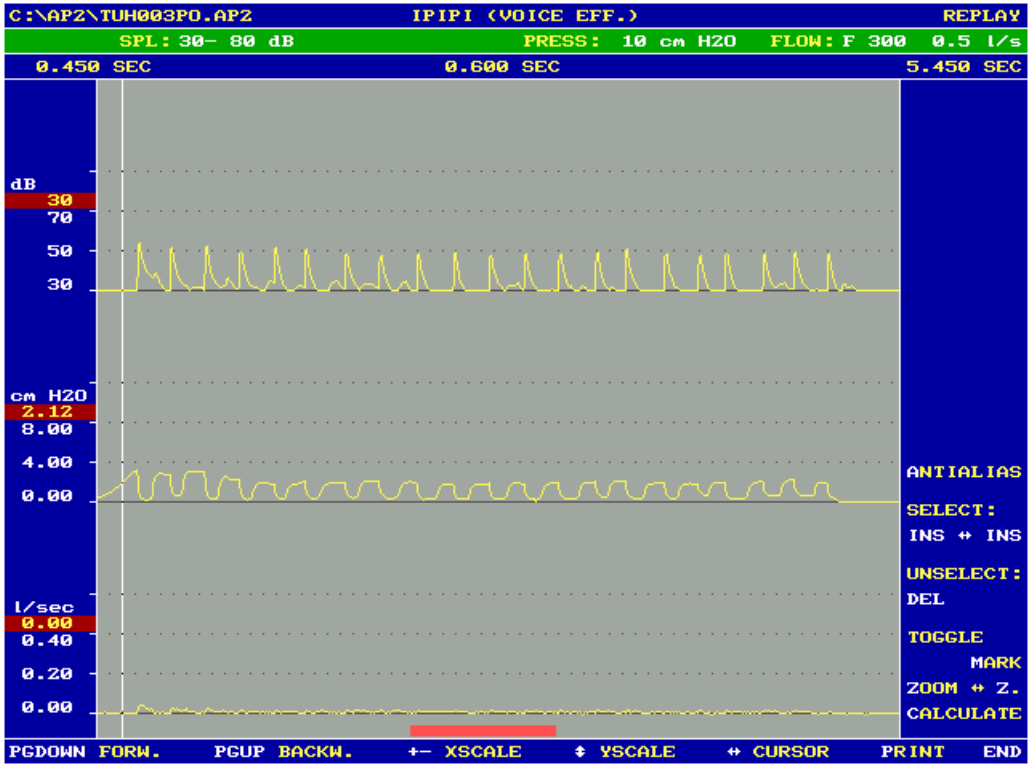
Simultaneous pressure and airflow recordings in a repeated /ㄆㄧ / task – Pressure peaks just before the aspirate airflow peak for /ㄆ /. During vocalic /ㄧ /, pressure is zero, whereas mean flow rate is quasi-level



Intraoral pressure for a 46-year female of vocal nodule with muscular tension dysphonia before & after voice therapy



Phonation threshold pressure (Kay APII) for a 30 years female, hyperfunctional dysphonia with vocal nodules. (Lt) before voice therapy; and (RT) after voice therapy



The stroboscopic unit for laryngeal imaging

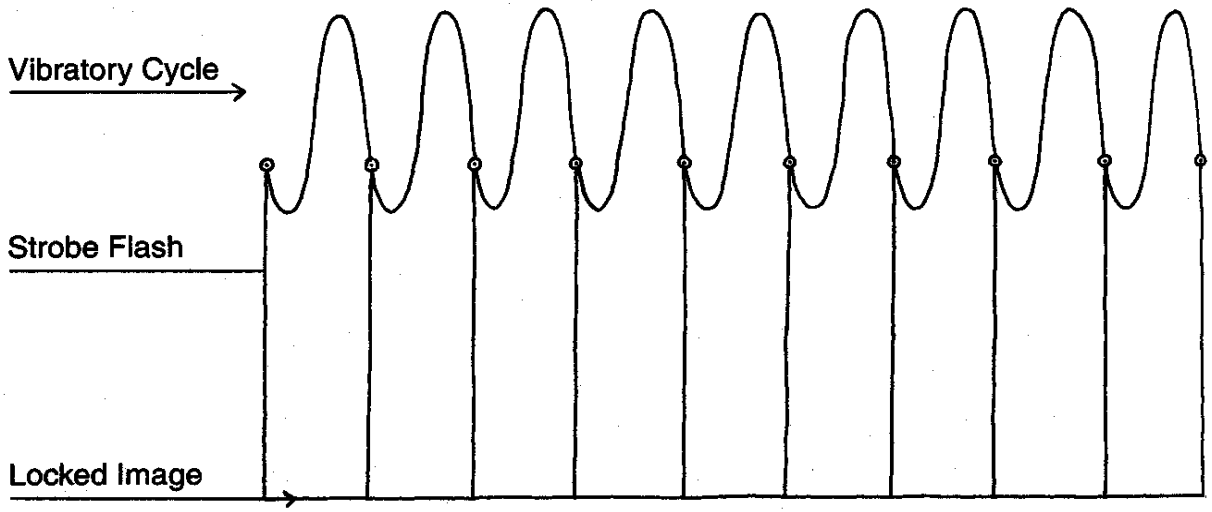


Figure 6-12. Strobe flash at the same point in the vibratory cycle: still image.

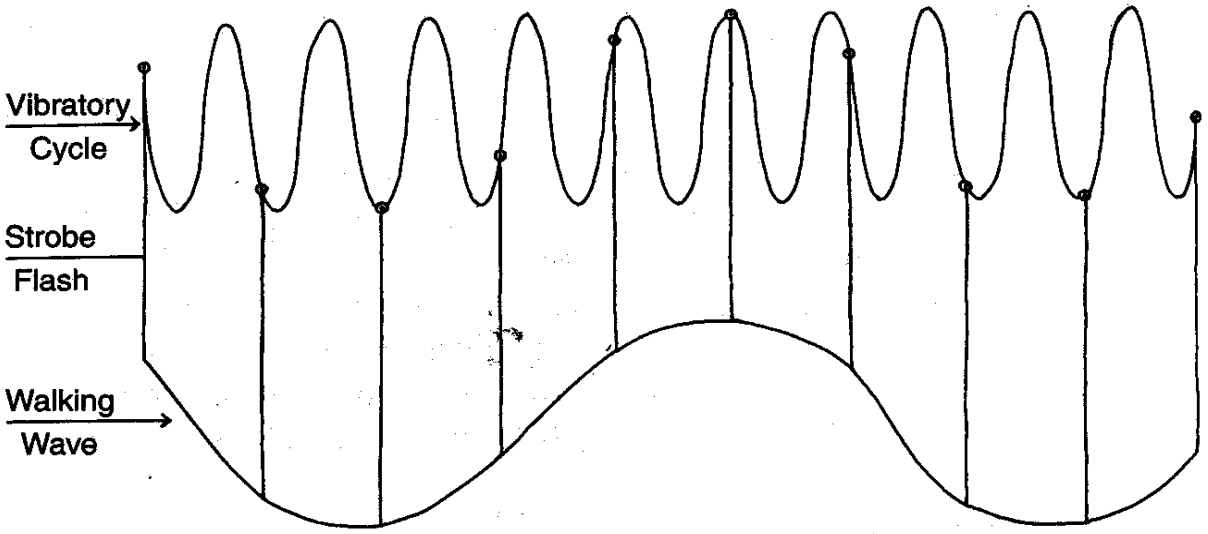
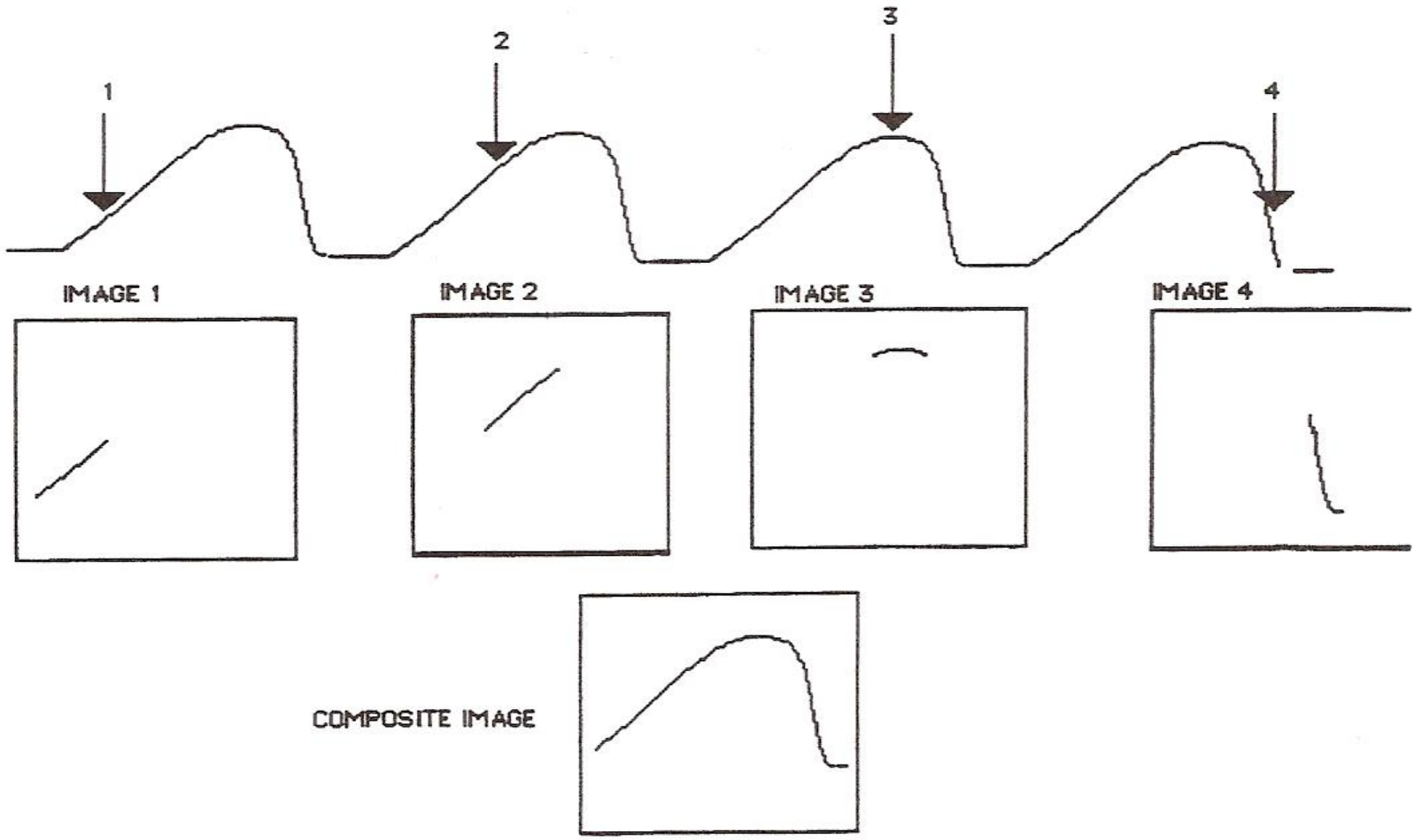


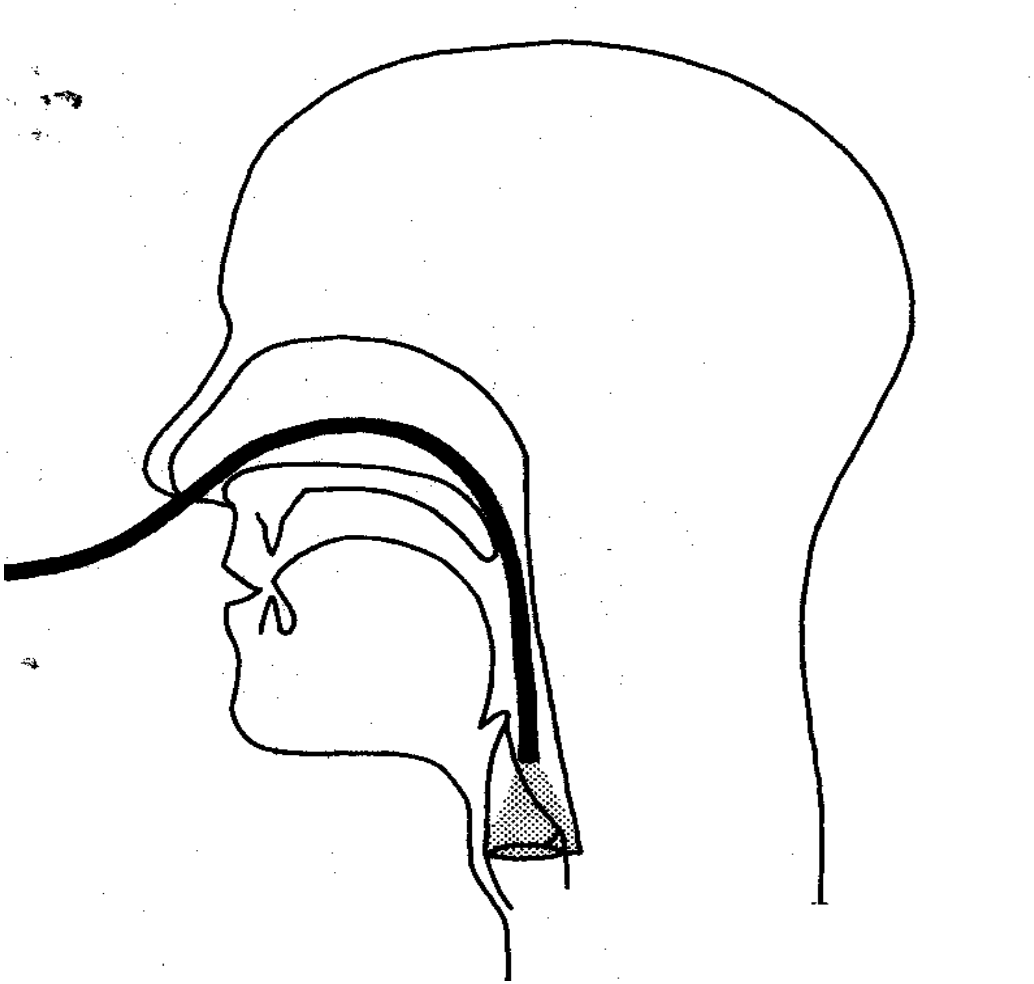
Figure 6-13. Strobe flashing at different points in the vibratory cycle: traveling image.

Strobe flashing at the same point (upper) and at the different points in the vibratory cycle

Light flashes emitted at slightly advancing positions of the glottal cycle (row 1) in videostroboscopy, and their resultant individual images (row 2) and the composite image (row 3)



Flexible endoscope position



Endoscope position

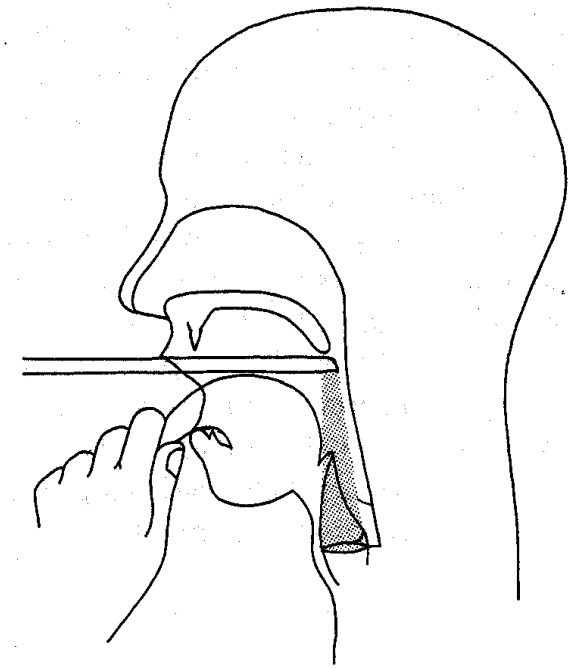


Figure 6-15. Ninety-degree endoscope position.

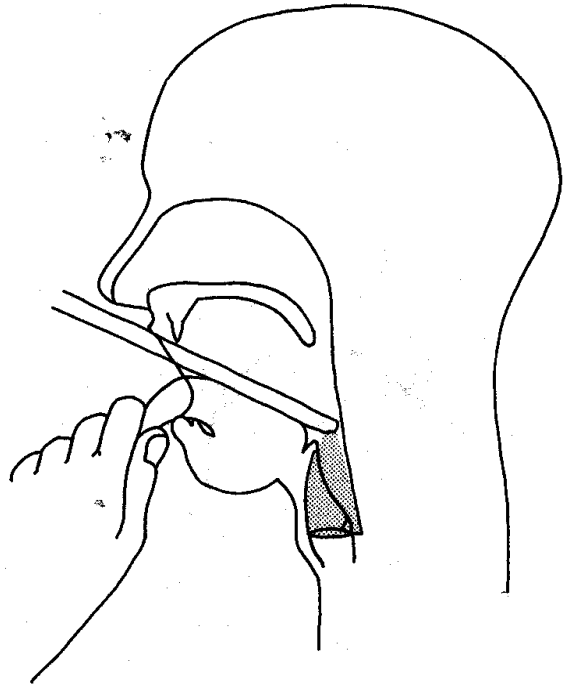


Figure 6-16. Seventy-degree endoscope position.